

CA1  
IB  
-N16

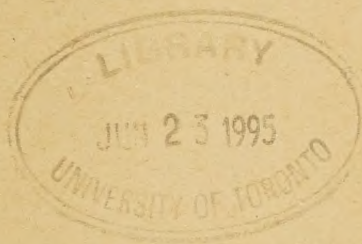
Government  
Publications


CANADA

NATURAL RESOURCES CANADA , Vol. 7.

DEPARTMENT OF THE INTERIOR, Ottawa.

Jan. to June, 1928.





Digitized by the Internet Archive  
in 2023 with funding from  
University of Toronto

<https://archive.org/details/31761103745212>



# NATURAL RESOURCES CANADA

Published by DEPARTMENT OF THE INTERIOR, Ottawa

VOL. 7

JANUARY, 1928

No. 1

## AERIAL SURVEY WORK IN CANADA DURING PAST YEAR

PHOTOGRAPH OVER  
45,000 SQUARE MILES

Topographical Survey and Royal Canadian  
Air Force Co-operate in Important  
Service

Since the inauguration of aerial photography in Canada six years ago, by the Topographical Survey, Department of the Interior, working in co-operation with the Royal Canadian Air Force, Department of National Defence, this art has repeatedly demonstrated its value in its application to mapping. This method fits in admirably with conditions that prevail in a new country of the extent of Canada, since by its use speed and economy are effected in mapping lands that by the ordinary methods of ground survey would involve a tremendous expenditure of time and effort.

During the year a total of 45,850 square miles of territory was photographed—28,650 square miles by oblique photography, and 17,200 square miles by vertical photography. The oblique photographs numbered 16,246 and the vertical photographs 46,340. The work was carried on in eight of the nine provinces of Canada. Individual operations included such large items as: the extension of oblique photographs over an area of 15,200 square miles west of lake Winnipeg for forestry purposes; an oblique photograph operation covering an area of 8,000 square miles over the Wood Buffalo Park near Fort Smith, N.W.T.; and a considerable number of vertical photographic operations of smaller individual areas throughout various parts of Canada. These vertical photographic operations embraced 2,500 square miles north of Ottawa; 1,720 square miles at Batiscau, Quebec; 180 square miles at Chicoutimi, Quebec; 645 square miles near Sudbury, Ontario; 440 square miles near Saint John, New Brunswick; and many others. The two last mentioned items were undertaken on behalf of the Geological Survey of Canada.

The extension of oblique aerial photographs over the 15,200 square miles west of lake Winnipeg was undertaken at the request of the Forest Service of the Department of the Interior, to assist in the work of locating timber for pulp purposes. The photographs were taken in the early summer, prints made immediately thereafter at Ottawa, and timber type maps prepared on scales of two inches to the mile, two miles to the inch,

(Continued on page 4)

## PROGRESS OF HYDRO DEVELOPMENT

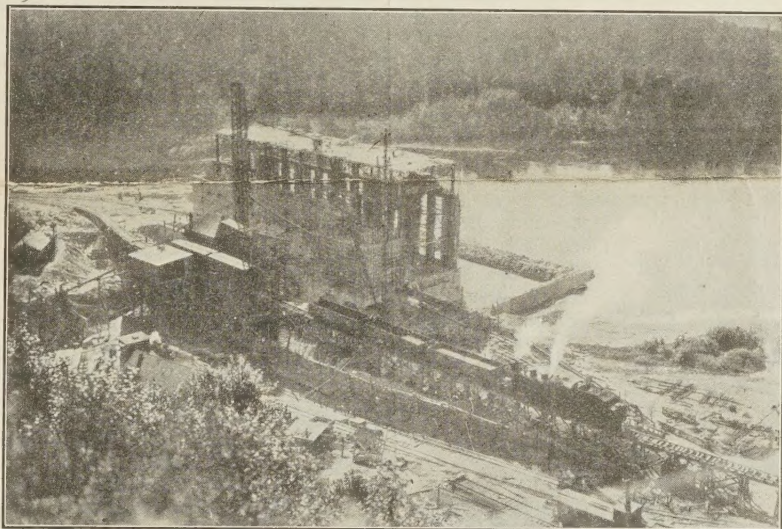
Hon. Charles Stewart, Minister of the Interior, Issues Annual  
Statement on Water-Powers of Dominion

The annual statement of the Honourable Charles Stewart, Minister of the Interior, with regard to the development and use of water-power in Canada, indicates that the great progress made during recent years continued without abatement in 1927 and that with the undertakings now in process of development or in active prospect, the next few years will witness further growth of very substantial proportions.

During the past year hydro-power equipment was installed ready for

sion to transmit power more than 200 miles from the Gatineau river in Quebec to the city of Toronto and the Commission's Niagara System. This line is designed to carry more than 250,000 horse-power at 220,000 volts and is expected to be in operation during the autumn months of 1928.

In installations added during 1927 the province of Quebec took the lead mainly due to the activities of the Gatineau Power Company on the Gatineau river. Hydro-electric construc-



Progress of Hydro Development—The 80,000 horse-power development of the Saint John River Power Company at Grand Falls on the St. John river in New Brunswick. The first unit of 20,000 horse-power is expected to be in operation in July, 1928.

operation to the extent of more than 221,000 horse-power bringing the total installation in Canada to a figure of 4,778,000 horse-power. In addition other undertakings were advanced to such a stage that a further total of 378,000 horse-power will be in place during the first six or seven months of 1928, thus bringing the total by the middle of the year to more than 5,100,000 horse-power. The remarkable increase which has been made in the past few years is apparent when it is stated that the latter figure is just double the total installation at the end of the year 1920.

Of the activities during 1927, the most significant feature was the increase in electric transmission voltage above that of the lines in the 110,000-volt class which have been operated throughout the Dominion for many years. In this regard the Shawinigan Water and Power Company was the pioneer in constructing a line of 165,000 volts, 135 miles in length, through practically uninhabited territory to carry 100,000 horse-power from the Isle Maligne development on the Saguenay river to Quebec city and vicinity. Construction of another line of still greater voltage was begun during the year by the Ontario Hydro-Electric Power Commis-

sion was also active in Ontario, in the Maritime Provinces, and in Manitoba and British Columbia.

In Quebec the Gatineau Power Company completed the construction of and brought into operation the initial installations of its Chelsea and Farmers Rapids developments, the first of 102,000 horse-power capacity and the second 72,000 horse-power. The Company also vigorously carried forward the construction of a third development on the Gatineau river at Pagan Falls where 204,000 horse-power is being initially installed. For the benefit of these three developments, the Mercier dam creating a very extensive storage reservoir of 95,000,000,000 cubic feet was also completed and the reservoir filled early in the year under the direction of the Quebec Streams Commission. Additional to its work on the Gatineau river this Company acquired the plants and systems of the Ottawa-Montreal Power Company and the Quebec Southern Power Company, completing the enlargement of the latter's Rawdon plant on the Ouareau river from 300 horse-power to 2,150 horse-power. The Shawinigan Water and Power Company, in addition to building the 165,000-volt

(Continued on page 3)

## RECORD SALES OF SCHOOL LANDS IN WESTERN CANADA

REFLECT PROSPERITY  
OF PRAIRIES

Brisk Bidding and High Prices at Auctions  
in Saskatchewan and Alberta

Since vast areas of fertile land constitute Canada's greatest single natural resource, the demand for land as shown by its price under conditions which preclude speculation, is one of the best barometers of the state of the country's agricultural progress. It is, therefore, gratifying to know that the prices obtained for school lands in the Prairie Provinces at the general sales held during 1927 were the best on record. Altogether 480,408 acres were sold for \$8,983,967, which represents an average of \$18.70 per acre. The lowest price obtained was \$7 per acre and the highest \$79, and while the latter has been exceeded in previous sales it is not these few extreme figures, caused by local circumstances, that are of importance but the general trend of prices.

The significance of these sales as an index of agricultural prosperity in Canada's Middle West is seen when the nature and distribution of the school lands are explained. Under the Dominion Lands Act one-eighteenth of the land area of the Prairie Provinces was set aside to provide funds for educational purposes in those provinces. As surveyed, each township consists of thirty-six sections of 640 acres each and two of these (sections 11 and 29 in each case) are designated school lands. They are sold by auction, after an upset price has been put on them by a valuator and in parcels not larger than a quarter section of 160 acres. The moneys received go into the School Lands Endowment Fund, which is administered by the Minister of the Interior for the benefit of the provinces concerned.

General sales by auction are held whenever in the view of the authorities the demand is sufficiently strong. This is determined upon consultation between the Minister of the Interior and the Provincial Governments as the aim is to secure the best possible returns for the school funds of the provinces. No general sales were held from 1920 until this year when Alberta and Saskatchewan favoured sales but Manitoba preferred to wait a little longer. The auctions were, therefore, held during the summer and autumn at Regina, Moose Jaw, Swift Current, Carlyle, Yorkton, Saskatoon, Rosetown,

(Continued on page 4)



## EXTENSIVE ROAD WORK IN NATIONAL PARKS

### Maintenance and Construction Program For Season Completed—Other Engineering Activities in Canada's Scenic Reserves

Engineering and construction work was actively carried on in the national parks of Canada during the 1927 season according to a statement from the Canadian National Parks Branch of the Department of the Interior. Work was carried on in all the parks and with a fairly favourable season for construction, the entire program for the year was completed.

Several important road projects were undertaken in Yoho park, British Columbia. The park section of the Field-Golden highway, twenty miles in length, was rushed to completion early in the season and this scenic road was formally opened to traffic on July 9. A three-mile section of road between Field and the natural bridge on the Kicking Horse river was re-located and re-built during the season. Numerous bad turns and steep pitches were eliminated and a standard surfaced road twenty feet wide is now available to the motorist. Several miles of the Yoho Valley drive to the Takakkaw falls was widened and next season will see all of this eleven-mile section of road of ample width for two-way traffic. An interesting scenic point in Yoho park not yet easily accessible to tourists is the Wapta falls on the Kicking Horse river. These falls have a height of forty feet and are very impressive. They are at present reached by trail from the new Field-Golden road near Leancoil, British Columbia, and a location survey of a branch road to the falls, three miles in length, was undertaken during the season.

The development of Prince Albert national park in Saskatchewan required considerable engineering work, the main item of which was the location of a trunk road from the south boundary of the park to the summer resort centre at Waskesiu lake. This comprised thirty-six miles of road location survey. Contour surveys were also undertaken of selected areas on the shores of Waskesiu lake.

In Jasper park, Alberta, the upper section of the Mount Edith Cavell motor road was completed, the terminus of this road now being some 200 yards from the lower end of Ghost glacier. On the Jasper-Edmonton highway a 300-foot truss bridge was built over Fiddle creek and the highway itself extended easterly three and one-half miles from the bridge, making a total of thirty-four miles constructed to date. With the near completion of the eastern section of the Jasper highway through the park attention was given to the western section which will eventually connect in the Yellowhead pass with the British Columbia road system. A location survey of this 17-mile section was made in the late autumn. During the season a three-mile section of tar sand paving on the Maligne road between Jasper townsite and Jasper Park Lodge was completed. Further extension to the new water system in Jasper townsite was made and to ensure an ample and continued water supply in dry seasons to the town of Jasper and the Canadian National Railway yards, a storage dam was constructed at Cabin lake, which is the source of the Jasper water supply.

In Kootenay park, British Columbia, a large amount of widening and improving was done to the Banff-Windermere road to handle motor traffic, which was the greatest in its

history. Construction of a new bath-house at Radium Hot Springs at the west end of Kootenay park was begun in the autumn. The new building is of attractive design with cement and stone foundations and will accommodate between 400 and 500 bathers a day.

An interesting survey was carried out in Glacier park, British Columbia, in connection with the development of the Nakimu caves. The rock underlying the upper valley of Cougar creek in Glacier park is honey-combed with water-formed tunnels and for some years work has been carried on connecting these tunnels by artificial galleries, so that now a lengthy and most interesting underground trip can be made. These underground rock passages, were surveyed so that reliable maps for the guidance and information of the public can be prepared.

In Rocky Mountains park, Alberta, a large amount of road maintenance was done to accommodate the heavy motor traffic of the tourist season, and in Waterton Lakes park, Alberta, the Akamina highway, connecting with the Flathead district and British Columbia, was extended three miles.

In Buffalo park, Alberta, construction was begun and practically completed of a much needed road connecting the park gate with the town of Wainwright.

In Elk Island park, Alberta, a road location survey four miles long was made from the provincial road allowance on the north boundary of the park to Sandy Beach resort at Astotin lake. The latter is a very popular spot in the park and at present is reached by a prairie trail. From Sandy Beach a location survey was also made of a road around the south end of the lake to headquarters, a distance of three miles.

In the eastern provinces general engineering work was carried on by the Parks staff in connection with the eastern parks and with historic sites.

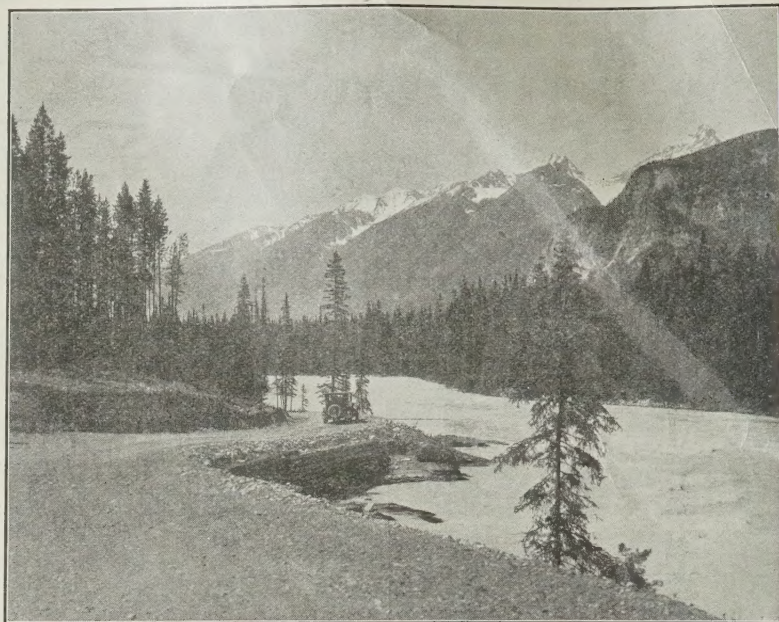
## PRAIRIE INDIANS IMPROVE CONDITIONS\*

### Encouraging Annual Report—Advances Made in Agriculture and Home Conditions

In dealing with her Indian population of approximately 105,000, Canada has ever acted on the principle that the aim was to get these wards into a state of self-support and independence as quickly as possible. The task has not been short or easy; the problems of Indians in the Maritimes are not those of British Columbia, nor do solutions worked out in Quebec and Ontario meet the needs of the Prairie Provinces. It is therefore gratifying to find that the reports, season by season, show that in all parts of the Dominion steady progress is being made towards the desired end.

Dealing with the Prairie Provinces where the tribes, totalling 35,000 individuals, entered, about forty-five years ago, into treaty with the Dominion

*\*Prepared at the direction of Dr. Duncan C. Scott, Deputy Superintendent General of Indian Affairs, Canada, by Mr. W. M. Graham, Indian Commissioner.*



Extensive Road Work in National Parks—View along the Field-Golden section of the Kicking Horse Trail about four miles from Field in Yoho national park, Alberta. This motor highway was opened to traffic last summer.

Government, the very fact that in this area the Indian farmers raised in 1927, in round numbers, one million bushels of grain, shows how tremendous have been the strides made. And this is only part of the story. Each year Indians are farming a little better than the year before and each year they are spending their own money to improve their positions and to make their homes more comfortable. Notwithstanding a late spring this year, the Indians seeded 64,534 acres, which was an increase of 2,385 acres over last year. Over six thousand acres of new land were broken and the area summer-fallowed was close to 30,000 acres.

The number of cattle on the reserves has increased slightly over 1926 and the quality of the herds has been maintained as shown by the successes achieved in open competition. Two carloads of steers from the Duck Lake reserve won first prize at the Moose Jaw Feeder and Stocker show in a competition open to the province of Saskatchewan. In the Feeder and Stocker Show at Calgary, Alberta, two shipments of steers from the Blackfoot reserve were awarded second and third prizes. The best prices are commanded by the cattle from the reserves and incomplete returns show that approximately \$95,000 was realized from Indian cattle fattened and sold in the three provinces.

The success of the Indians in farming is reflected in the improving home conditions. The year 1927 was one of great building activity on prairie reserves, close to 100 new homes being erected. On the Fairford, Little Saskatchewan, and Lake St. Martin reserves about thirty-five houses have been erected, and about fifteen on the other reserves in the Portage la Prairie and Manitowapah Agency, Manitoba. These dwellings are constructed of logs, chiefly spruce, hewn on both sides and dovetailed at the ends. The sizes of the houses range from 14 feet by 18 feet to 16 feet by 22 feet and all are about 12 feet in height. They are finished with shingled roofs, two windows, and a door, and are well floored. These are taking the place of the low log shacks with mud roofs. At the Crooked Lakes Agency, Saskatchewan, thirteen new Indian homes and eight barns were built of cedar logs. At the Moose Mountain Agency, also in Saskatchewan, where housing conditions have been poor, the situation is relieved by the erection this

year of eleven new houses. These were built of good logs with frame gables and roofs, and are plastered with lime and sand. Sixteen new homes were put up on reserves in the Touchwood Agency, Saskatchewan.

In addition to the money spent by the Indians on new homes, thousands of dollars from their own funds were expended for the purchase of horses, and for implements and other farm equipment. The amount so spent is increasing each year and greater care is being taken by the natives of their stock and equipment.

The rapid change in farming methods among the Indians is largely due to the growing number of graduates from the Indian schools among native farmers of today. The young Indians are taking the places of the older natives and are bringing into use the advanced methods of farming taught in the schools. Greater interest is being shown in vegetable gardening; there is a steady increase in the number of Indians milking cows and making butter; and poultry and swine raising are being added to the other farming pursuits.

The progress of the Indians of the Prairie Provinces is most encouraging. Socially and economically their advancement has been steady and it is expected that in the not far distant future they will reach a position of complete self support and independence.

### How Surveyors Travel

Many kinds of transport are used by field officers of the Geodetic Survey of Canada in the prosecution of their work of triangulation and levelling. Wherever possible advantage is taken of the means provided by the trains and steamboats of the regular transportation companies; but where these fail and roads or trails are available, they use motor cars or horse-drawn vehicles. Farther back from settlement, in the wild undeveloped parts, the surveyors are thrown entirely on their own resources and forced to travel by motor boat or canoe, by pack train or by dog train, depending on the season and the type of country in which they are working. In some cases man-packing is resorted to in order to reach summits otherwise inaccessible. In contrast to these primitive methods it may be stated that the most modern of all forms of transport, the aeroplane, has been used of late years and found ideal for certain phases of the work.



# NATURAL RESOURCES CANADA

PUBLISHED BY  
THE DEPARTMENT OF THE  
INTERIOR

HON. CHARLES STEWART,  
Minister

W. W. CORY, C.M.G.,  
Deputy Minister

*Natural Resources, Canada*, is published monthly for the purpose of promoting interest and supplying information respecting Canada's natural resources and their development. Inquiries respecting any matter or document dealt with should be addressed to

The Secretary,  
Department of the Interior,  
Ottawa.

This bulletin is also issued in French.

OTTAWA, JANUARY, 1928

## PROGRESS OF HYDRO DEVELOPMENT

(Continued from page 1)

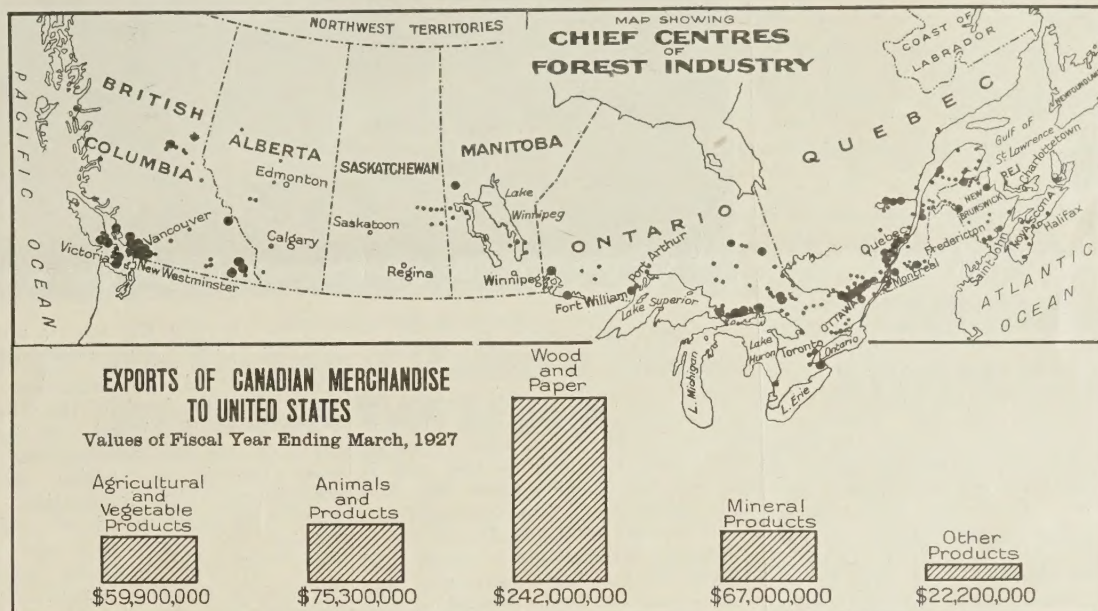
transmission line, placed in operation a plant of 4,000 horse-power at St. Alban on the Ste. Anne de la Perade river and started work in connection with the installation of an additional 40,000 horse-power unit at Shawinigan Falls. Other installations placed in operation in Quebec during the year included a 2,000 horse-power unit at Pont Rouge by the Donnacona Paper Company and the completion of a 2,000 horse-power development by the town of Coaticook. The largest project under construction is the 800,000 horse-power development of the Alcoa Power Company at Chute a Caron on the Saguenay river. Other projects or extensions under way are a 65,000 horse-power development by the Montreal Island Power Company on Des Prairies river near Montreal; the addition of two 10,000 horse-power units to the Canada Northern Power Company's plant on Quinze river; the addition of unit No. 11 of 45,000 horse-power to the Duke-Price development on the Saguenay river; and a 300 horse-power plant by the Cie d'Enterprises Publiques near Riviere a Pierre. Contracts have been let by the city of Sherbrooke for a new development of 5,800 horse-power at Westbury Rapid on the St. Francis river, and the Ottawa River Power Company has authorized the addition of a 25,000 horse-power unit to its development near Bryson on the Ottawa river. The Ontario Paper Company has a plant of 40,000 horse-power under way on the riviere aux Outardes.

The Quebec Streams Commission continued to enhance and encourage power development throughout the province through beneficial work in connection with its extensive storage reservoirs on various rivers.

In Ontario the outstanding work of the year was the commencement of construction by the Ontario Hydro-Electric Power Commission of the 220,000-volt transmission line to carry the 260,000 horse-power which the Commission has contracted to take from the Gattineau Power Company. Actual installations during the year included two plants at Sturgeon Falls and Moose lake on the Seine river of the Ontario and Minnesota Power Company with 10,000 horse-power and 14,420 horse-power capacities, respectively. A further plant of 13,200 horse-power at Calm lake on the same river will be completed early in 1928. The Gananoque Electric Light and Water Supply Company added 1,500 horse-power to its Kingston Mills plant, and smaller installations included 325 horse-power by the town of Smiths Falls and 75 horse-power by the town of Streetsville. Among the developments under construction is the Ontario Hydro-Electric Power Commission's

# CANADA'S FOREST INDUSTRIES

## The Bulwark of the Dominion's Trade With the United States



Canada's far flung line of forest industries stands out as perhaps the most striking feature of the Dominion's industrial landscape.

Only when one realizes what an enormous volume of commerce these forest industries support, and what a dominant role they play in keeping Canada's trade with the United States on a fairly even keel, can one clearly appreciate what a huge stake the Canadian people have in forest protection.

These hundreds of mills together form the main supporting pillar of Canada's

export trade with her neighbours to the south. The mounting sales of forest products alone have enabled the Dominion in recent years to keep her trade with the United States from becoming altogether lopsided. Last year Canada sold to the United States roughly \$242,000,000 worth of wood and paper products, this class of goods representing more than half of the total value of our exports to that country.

How long Canada can continue to export forest products at such a rate is a question which few persons would care to try to answer, for there is a

pretty unanimous agreement that the Dominion's forest resources are being steadily and rapidly depleted. In the light of this situation, efficient forest protection and management must take rank as one of Canada's commanding problems. It is a question which commands the active concern not merely of those who find employment in forest industry, or of those whose capital is invested in that field, but of every individual and institution interested in seeing that the Dominion's commercial position is maintained on an even keel.

development at Alexander Landing on the Nipigon river which when completed in 1929 will have an installation of 54,000 horse-power. The 56,250 horse-power plant of the Spruce Falls Company at Smoky Falls on the Mattagami river was well advanced, and the International Nickel Company of Canada is commencing the installation of 28,200 horse-power on the Spanish river.

In New Brunswick the Saint John River Power Company made rapid progress on the construction of its 80,000 horse-power development at Grand Falls on the St. John river. The New Brunswick Power Commission made an extensive investigation of the forty-mile reach of the St. John river between Woodstock and Hawshaw which gives promise of providing a further development on that river of 30,000 continuous horse-power. Similar investigations were made on the same river by the Saint John River Power Company, and on the Nipisiguit river the Bathurst Company carried on investigations at the Rough Waters site near the mouth. Two tidal power projects are also under investigation on the bay of Fundy in New Brunswick.

In Nova Scotia, the Nova Scotia Power Commission completed the construction of the 8,000 horse-power Sandy Lake development of its St. Margaret Bay system. The Commission also carried on numerous investigations including a project of 3,000 horse-power at lake Ainslie in Cape Breton, a proposed tidal power project at Amherst Point on the bay of Fundy, and investigations of the complete utilization of the Liverpool and Medway rivers. The Bridgetown Electric Light Company added 315 horse-power to its plant at Bloody Brook, while the Avon River Power Company has under construction a

second hydro-electric plant at Avon River Falls of 4,300 horse-power. The town of Middleton has storage dams under construction on the Nictaux river and the Gaspereau River Light, Heat and Power Company has work under way in connection with the diversion of water from the Avon river to its plant at White Rock on the Gaspereau.

In Prince Edward Island the Montague Electric Company completed a hydro-electric development of 160 horse-power on the south branch of the Montague river.

In British Columbia the B.C. Electric Railway Company completed the construction, on the shore of Stave lake of a 12,500 horse-power plant. On Vancouver island the Company pushed forward the reconstruction of the flume carrying water to its Jordan River development. On the Bridge river through a subsidiary, the Bridge River Power Company, extensive preparatory work was carried on in connection with a project of 500,000 horse-power ultimate capacity, and a contract was let for the construction of a tunnel leading from Bridge river to the power station site on Seton lake. The West Kootenay Power and Light Company carried forward the construction of its new 60,000 horse-power development on the Kootenay river at South Slokan. The city of Kamloops built a storage dam at the outlet of East Barriere lake to impound some 15,000 acre-feet for the benefit of its plant on the Barriere river. Other construction included a development of 80 horse-power at the outlet of Nicola lake by the Nicola Lake Stock Farms Limited, a diversion from Handy creek into Cass creek by the Wallace Fisheries, and a tunnel under construction by the British Columbia Pulp and Paper Company to tap its Henrietta Lake reservoir.

In Alberta the East Kootenay Power Company completed the construction of a 13,000 k.v.a. steam power station at Sentinel in the Crownsnest district as an auxiliary to its hydro-electric plants on the Bull and Elk rivers in British Columbia, and the Calgary Power Company greatly extended its transmission system.

In Saskatchewan the Provincial Government appointed a commission to enquire into the power resources of the province and a very active program of investigations was carried out.

In Manitoba the Manitoba Power Company completed the superstructure of its Great Falls plant on the Winnipeg river and brought into operation unit No. 4 of 28,000 horse-power capacity. The city of Winnipeg made improvements to its dam at Pointe du Bois on the Winnipeg river, and awarded a contract for the excavation of a rock cut to increase the discharge capacity of the river at Eight Foot falls. A prospective development of great importance to the northern part of the province is in view at Whitemud Falls on the Nelson river where an installation of from 30,000 to 40,000 horse-power is proposed to serve power over a transmission line 170 miles in length to the Flin Flon mining district northwest of the Pas.

Numerous undertakings are in the initial stages of construction and others are about to be commenced which will result in an addition to the Dominion total of more than 2,000,000 horse-power, much of which, it is expected, will be in place before the end of 1930. The capital required for this new work will involve the direct investment of at least \$200,000,000, and many times this amount in the application of power to industry and domestic and public use.



## PROGRESS OF MINING IN CANADA IN 1927\*

Great Activity in all Fields—Annual Production Valued at Nearly \$250,000,000

The mining industry continues to play a very important role and make a contribution of the first order to the prosperity of Canada. It is an industry that, sadly neglected for a long time, has made a striking growth during the last quarter of a century. It is now firmly established and its future is assured. The annual mineral production is nearly \$250,000,000.

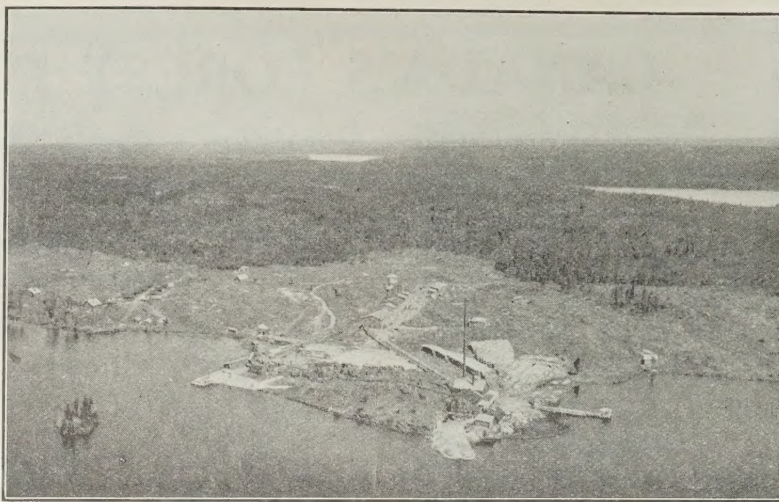
The most important metals produced in Canada are gold, copper, nickel, lead, zinc and silver. When production statistics for the year have been assembled there will probably be found no great difference in total value for the years 1926 and 1927. Increase in production in some cases may be offset by lower prices that have prevailed during the year for copper, lead, zinc and silver. An average falling off in price for copper, lead and zinc of about one cent a pound, which is the actual story for 1927, is a big item in the figuring of net profits. Notwithstanding this, production has been well maintained.

British Columbia leads in copper, with three large mines at Anyox, Britannia and Allenby; Ontario is a good second with copper from the Sudbury ores; and Quebec third, producing from a mine that has been in nearly continuous operation for half a century. Quebec will show a very substantial increase next year since the Noranda smelter will no doubt have started operations before this appears in print. The recent increase in the price of copper will be an important factor in getting this industry firmly established and will also be an incentive to push work towards bringing the big Flin Flon ore body of northern Manitoba to a producing stage at as early a date as possible. The construction of the branch line of railway to the Flin Flon has been decided upon and there is every promise that as a result Manitoba will soon take her place as one of the important mining provinces. With the building of this railway is bound up also the future of a deposit of copper-zinc ore of considerable magnitude at Cold Lake. A flurry was created by the discovery in the Frood mine, Sudbury, of a body of ore running very high in copper. All of this goes to prove that as a copper producer Canada has good prospects of great expansion.

The nickel industry of Ontario is buoyant and figures for the first nine months of the year show a very satisfactory increase. There has been a substantial increase in the gold production of Ontario, but a falling off in that of British Columbia. Ontario accounts for about 88 per cent of the total Canadian production. The auriferous content of the Noranda ores will bring Quebec to the fore next year with a much larger production of gold than she has yet made.

The Sullivan mine of British Columbia is the source of the greater part of the lead and zinc produced in Canada. The Slocan mining division accounts for a considerable quantity.

\*Prepared at the direction of Dr. Charles Camsell, Deputy Minister of Mines, by Mr. Wyatt Malcolm, Geological Survey.



Progress of Mining in Canada in 1927—Aerial view of the Flin Flon mine in northern Manitoba where extensive development work was begun toward the end of the past year.

There is also a production of lead from Yukon, Ontario, and Quebec, and of zinc from Quebec. The silver of Ontario has suffered a slight falling off and British Columbia is now well in the lead, deriving her silver from lead and zinc ores and from the gold and silver deposits of Portland canal.

Asbestos production is good, and activity in building, construction, and water-power development have reflected favourably on the cement and clay-products industries.

Better labour conditions have prevailed in general in the coal-fields with a resultant increase in production. Drilling has been active in the search for petroleum. Several dry holes have been drilled in different parts of the country, and a test well sunk to a depth of about 6,000 feet on Governor's island, Prince Edward Island, failed to strike anything of value. Operations elsewhere have met with success. Oil has been struck in additional wells in the Turner Valley field, Alberta, and as a result the production for this year shows a substantial increase. The striking of oil in a well near Skiff in the southern part of Alberta has drawn attention to the possibilities of this area, and exploratory work on the Ribstone-Blackfoot structure has been satisfactory.

### AERIAL SURVEY WORK IN CANADA DURING PAST YEAR

(Continued from page 1)

and four miles to the inch. These maps were immediately forwarded to the forest officer in charge of the timber cruising in the field. The data so provided rendered possible the elimination from cruising operations of extensive tracts of non-timbered country and a concentration of activities on areas of commercial value. Thus it was possible to cruise this entire area in the one season which it would have been entirely impossible to do without the assistance of photographic maps.

One of the interesting features in connection with the season's work was the covering by vertical aerial photographs of the route of the New Welland canal through the Niagara peninsula. This was undertaken at the request of the Department of Railways and Canals for the purpose of showing the progress of the work in pictorial form. The advance made was readily seen by comparison with photographs of the same area which had been taken in 1921.

Another interesting operation was the photographing, both vertical and oblique, of Niagara falls, at the request of the Dominion Water Power and Reclamation Service, for the purpose of studying various features relating to

the effect of ice conditions, the recession of the brink of the falls, etc.

The value of the aerial photographs taken on this work does not cease with their use in the actual mapping operations. The information upon them is of importance in all problems relating to development and in a study of such problems generally obviates the necessity of much personal investigation over the territory in question. The Topographical Survey has been made a central bureau for the collection and indexing of all aerial photographs. Here the ever-increasing numbers of these photographs are first converted into maps and are then kept on file for reference and record purposes.

The successful carrying out and application of aerial photography has been due to the close co-operation of the various organizations of the federal and provincial services and has facilitated to a very marked degree the work of investigating and developing the natural resources of Canada.

### RECORD SALES OF SCHOOL LANDS IN WESTERN CANADA

(Continued from page 1)

Biggar, and North Battleford, in Saskatchewan; and at Lloydminster, Vermilion, Vegreville, St. Paul de Metis, Camrose, Wetaskiwin, Wainwright, and Edmonton, in Alberta. This shows the wide range of territory covered. The purchasers were generally farmers in the locality who bought to extend their own holdings or to secure farms for their sons. The sales, therefore, indicate both the confidence of the people in the future of prairie agriculture and also their strong financial position.

The state of the School Lands Funds of the various provinces built up from the sales of the past is a matter of importance. From the time these funds were established all moneys obtained from the sale of school lands, less the bare costs of administration, have been placed to the credit of the provinces concerned. Up to the close of the fiscal year 1926-27 the balance standing to the credit of the School Lands Fund of each province was as follows: Manitoba, \$5,844,371; Saskatchewan, \$14,833,450; Alberta, \$7,766,838. These figures will be considerably augmented as a result of the 1927 sales.

The Dominion Government allows interest on these funds at the rate of 5 per cent per annum and for the fiscal year 1926-27 the following sums represent the interest paid to the provinces for the upkeep of their schools: Manitoba, \$291,150; Saskatchewan, \$717,875; Alberta, \$376,450. In addition to current interest payments on

## LORD SELKIRK AND CANADIAN PLACE-NAMES

His Activities in Various Parts of Dominion Commemorated in Nomenclature

Perhaps no figure in Canadian history is more widely commemorated in the place-nomenclature of the Dominion than Thomas Douglas, 5th Baron Daer and Shortleugh and Earl of Selkirk in the peerage of Scotland. The name of the Scottish peer, who controlled the Hudson's Bay Company and colonized in three provinces, is preserved in the four quarters of the Dominion. In Prince Edward Island, in the east, Selkirk settlement and Selkirk point mark where he personally established 800 Highland settlers in 1803. In the west, Selkirk water has been shown on charts since 1846 as the name of a portion of Victoria harbour, Vancouver island. In the north, Arctic explorers have bestowed the Earl's name on several places including Selkirk, a bay in Melville peninsula; and Selkirk, a cape on Boothia peninsula. In the south, in Kent county, Ontario, Baldoon, named after one of the Selkirk estates in Wigtownshire, Scotland, is a memorial of the small colony, established there, in 1803, with which the Earl was associated. In Manitoba, the town of Selkirk and Selkirk island, lake Winnipeg, and Point Douglas, a district of the city of Winnipeg recall the settlement in the Red River valley by Lord Selkirk in 1812 of the first body of colonists in the Northwest.

Selkirk is also the name of a village in Haldimand county and of a township in Sudbury district, Ontario; of a mountain range and of a mountain peak in British Columbia; and of a settlement in the Yukon, at the confluence of Pelly and Lewes rivers where fort Selkirk of the Hudson's Bay Company was built and named in 1843. In British Columbia, too, mount Daer and Daer creek, named after a title of the Earl, and at one time in Alberta there was a trading post, St. Mary's house, on Peace river probably named after Selkirk's birthplace and family seat, St. Mary's Isle, Kirkcudbright, Scotland.

### Canada's Seed Grading System

Commerce in seeds in Canada is conducted on a basis of legally defined grades, and the quality of seed sold must conform to prescribed grade definitions. This involves responsible duties for the inspectors of the Dominion Seed Branch, Department of Agriculture, who grade all agricultural seed and a large part of the field root and garden vegetable seeds required for domestic use and for export. According to the latest annual report of the Minister of Agriculture 32,617 control samples were examined and graded at laboratory points during the fiscal year 1925-26. The total quantity of seed represented by these samples amounted to several millions of bushels. That the system followed in this country is sound is shown by the recognition given on foreign markets to Canadian seed offered under official sale and grade names.

debentures, the amounts received by the provinces during the same year included revenue payments in respect of interest on deferred payments, and leases, permits and fees for cultivation, grazing, timber, hay, etc., to the following amounts: Manitoba, \$17,099.20; Saskatchewan, \$386,740.72; Alberta, \$266,190.18.



# NATURAL RESOURCES CANADA

Published by DEPARTMENT OF THE INTERIOR, Ottawa

VOL. 7

FEBRUARY, 1928

No. 2

## CANADIAN FOREST INDUSTRIES SHOW RAPID PROGRESS

### FOREST FIRE LOSSES ARE REDUCED

Hon. Charles Stewart Discusses Develop-  
ments of 1927—Sounds Note  
of Warning

The Minister of the Interior, Honour-  
able Charles Stewart, has issued the fol-  
lowing statement respecting the progress  
of Canadian forest industries in 1927:—

"During the past year the forests  
have continued to play a most impor-  
tant part in the industrial activities of  
Canada. Though agriculture will un-  
doubtedly always occupy the premier  
position as regards value of products in  
this country, the forest continues to  
hold its place as the second great  
natural resource of the Dominion. The  
fact that forests, like agricultural land,  
can be made to produce successive crops  
for all time, should stimulate our ef-  
forts to conserve our forests so that the  
supply of wood will not only be main-  
tained but augmented and improved, in  
order that this and succeeding genera-  
tions may be able to enjoy the benefits  
of this wealth-producing heritage.

"A little over one-third of the land  
area of Canada is essentially forest land  
and should be permanently devoted to  
timber production. This area, if pro-  
tected from the ravages of fire and de-  
structive exploitation, is capable of pro-  
ducing several times as much as we  
now use annually, but if the conditions  
which have prevailed in the past are  
allowed to continue, there is very grave  
danger that even in our time, the vast  
industries dependent on wood will find  
it difficult to secure the necessary raw  
material. Indeed already shortages of  
wood are apparent in some districts.

"It is with the greatest thankfulness  
that I can report that the loss from for-  
est fires in 1927 is less than in any pre-  
ceding year for which we have records.  
Favourable weather was largely respon-  
sible for this happy condition but im-  
proved protective organization, and  
above all greater care on the part of  
the public, undoubtedly were most im-  
portant factors. In this matter we  
must remember that 'eternal vigilance  
is the price of safety.' Off-peak years  
for forest fires must not be allowed to  
influence our preparedness for the times  
of extraordinary danger which experi-  
ence shows are recurrent at irregular  
intervals. Our organizations must be  
planned on the basis of protection ade-  
quate to cope with extra-hazardous con-  
ditions, because effort on any other

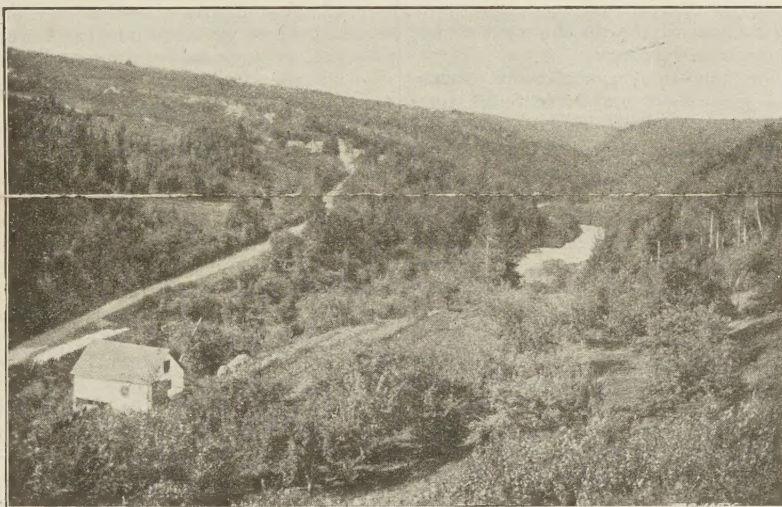
(Continued on page 3)

## LURE OF CANADA'S VACATION LANDS

### Dominion Offers Wide Range of Attractions to Tourists— Scenic Resources Widely Recognized

Much has been said in recent years  
relative to the variety and extent of  
Canada's recreational resources. The  
annual national income derived from  
such resources, although hard to esti-  
mate accurately, is one which compares  
favourably with the annual values of  
the products of her forests, of her

and 1926 the number of cars receiving  
permits to enter the Dominion for a  
period of 30 days rose from 59,000 to  
550,000 and those entering for twenty-  
four hours increased from 177,000 to  
over 1,500,000. The number entering  
for a period of from one to six months  
also shows a substantial increase. Aside



A Beauty Spot in the Maritime Provinces—The beautiful valley of the Gaspereau river,  
Nova Scotia, lying southeast from and parallel to the famous Cornwallis valley. This is  
one of the favoured tourist regions of Nova Scotia.

mines, fisheries or any other industry.  
In addition to keeping abreast with other  
progressive countries in the field of  
commercial activities, Canada has es-  
tablished a world-wide reputation as  
being a charming holiday land where  
practically all forms of recreation are  
available at moderate cost to the visitor.  
There are few records in the annals of  
Canadian development more interest-  
ing or more remarkable than those of  
the manner in which the economic im-  
portance of the Dominion's recreational  
features has grown in recent years.

Not the least among the many  
changes in the conditions of modern  
life are those resulting from the devel-  
opment of the automobile as a means  
of transportation. An amazing increase  
in the volume of holiday movement  
has been witnessed during the last few  
years and the automobile has played a  
large part in this regard; it is no longer  
considered a luxury of the rich but is  
rapidly becoming a necessity for the  
man in moderate circumstances.

Some idea of the extraordinary growth  
of the holiday traffic may be gained  
from a comparison of the records of  
touring automobiles entering Canada  
over a period of years. Between 1919

from the remarkable increase of motor  
tourists, railway and steamship lines  
each year add enormous numbers to the  
thousands who holiday in Canada. In-  
cluding an even wider field than the  
automobile these organizations have  
spread the Dominion's fame as an ideal  
vacation land far and wide.

The vast numbers who annually visit  
Canada by automobile can find an op-  
portunity to spend part or all of their  
vacation in territory extending beyond  
the usual avenues for travel. In keep-  
ing with the desire of many who wish  
to visit newer fields and in order to pro-  
vide facilities for easy and convenient  
travel, motor highways have been con-  
structed which now enable the tourist  
to reach beautiful lakeland country, in  
some instances rarely explored. There  
are now over 150,000 miles of improved  
roads in Canada. In addition to this  
vast mileage, which is kept in good  
condition throughout the touring season  
and in some districts available to the  
motorist during the whole year, there  
are many thousands of miles of other  
roads quite suitable for general motor  
traffic. Leading to practically all places  
of interest in the populated areas of the

(Continued on page 2)

## OIL AND GAS PRODUCTION IN WESTERN CANADA

### DEVELOPMENT IN 1927 PROGRESSED STEADILY

Minister of the Interior Issues Annual  
Review—Early Fields Proved—  
Promising Areas Uncovered

The year 1927 has seen steady pro-  
gress in the development of the petro-  
leum and natural gas resources of  
Western Canada, according to a state-  
ment issued by the Honourable Charles  
Stewart, Minister of the Interior. A  
review of the operations carried on in  
the various fields in the Prairie Prov-  
inces indicates that several of the earlier  
prospected fields have already proved  
their worth, while investigations have  
uncovered new and promising oil-bear-  
ing areas. The year's operations were  
marked by great drilling activity and  
although the actual footage drilled was  
not as great as last year the decrease is  
accounted for by the fact that it is  
deeper drilling and consequently slower.  
There was a marked increase in the gas  
and oil production of the western fields,  
the output of oil reaching an estimated  
total of 329,000 barrels, while the pro-  
duction of gas for consumption totalled  
nearly eleven and a half billion cubic  
feet. The 1926 figures for oil were  
about 219,600 barrels and for gas nine  
and a half billion cubic feet.

Drilling operations were carried on in  
Manitoba and over a wide area in Sas-  
katchewan with indications of favour-  
able results in the near future. The  
fields in Alberta, however, include the  
main producers today. The famous  
Turner Valley field, from which the  
greater part of the output of oil and  
gas is secured, continued to attract  
great attention. Steady progress was  
made and the producing areas were  
further extended so that it may be con-  
servatively stated that the field is  
proved for over nine miles in length  
and one mile in width. Beneath this  
area both the high grade crudes of the  
upper formations and the naphtha-laden  
gas of the Royalite dolomite occur. The  
high-grade crude area now extends as  
far north as the Seneca well located on  
Section 34, Township 20, Range 3, west  
of the 5th meridian, and southward to  
the Home No. 1 well on Section 20,  
Township 19, Range 2, west of the 5th  
meridian, and geologically there is no  
reason for supposing that these wells  
mark the limits of the high-grade crude  
area in either direction. The Royalite  
dolomite formation is proving produc-  
tive in all cases where it has been

(Continued on page 2)



## GOVERNOR SIMCOE AND ONTARIO PLACE-NAMES

### First Executive of Upper Canada Named Counties and Other Features

Many Ontario place-names are due to His Excellency Colonel John Graves Simcoe, Lieutenant Governor of Upper Canada from 1792 to 1796 according to the Geographic Board of Canada. As the first governor of the new province, it devolved upon him to organize it politically and in 1792 he divided it into nineteen counties, which he called Glengarry, Stormont, Dundas, Grenville, Leeds, Frontenac, Ontario, Addington, Lennox, Prince Edward, Hastings, Northumberland, Durham, York, Lincoln, Norfolk, Suffolk, Essex and Kent. With the exception of Suffolk, all these names still survive. The counties Northumberland to Kent are named after the shires and counties along the east coast of England.

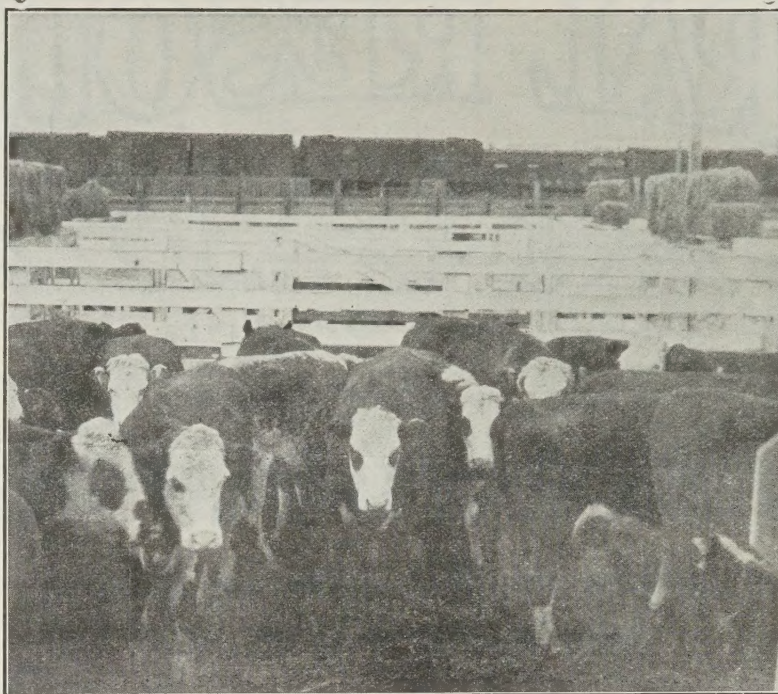
Before sailing from England, Simcoe had considered calling the capital of the upper province "Georgina" after the reigning sovereign, George III, but this name was never actually given. On first surveying the situation in Upper Canada Simcoe's intention was to locate the capital where London now stands but owing to obstacles, chiefly the difficulty of transportation, he later relinquished this plan. London, as is shown by the Governor's correspondence, received its present name some time previous to September, 1793. Earlier in the year, the river La Tranche, on which London stands, had become the Thames, and Chatham had been selected as the name of a projected city 18 miles from its mouth.

Simcoe was no respecter of Indian names and under date July 24, 1793, there is mention of the probable seat of government being for a time established at "York." Toronto was thus renamed in honour of Prince Frederick, Duke of York, and the Indian name was not restored until 1834.

Other place-names in the vicinity of Toronto due to Simcoe are Humber river and Don river, named after the rivers of the same name in Yorkshire, England; Yonge street, thirty-two miles long, after Sir George Yonge, Secretary of State for War, a neighbour; and Dundas street after Henry Dundas, Viscount Melville, Secretary of State. All these names date from 1793 as do the re-naming of lac aux Claires as lake Simcoe, and the giving of the names Kempenfelt and Cook to bays in the lake. Lake Simcoe was named after Colonel Simcoe's father, Captain John Simcoe of the Royal Navy, who was killed in action at Quebec in 1759; the two bays were named after Rear Admiral Richard Kempenfelt and Captain James Cook, the circumnavigator, both of whom had served with Simcoe's father. At this time, too, Holland river was named after Surveyor-General Samuel Holland and Matchedash bay in Georgian bay was re-named Gloucester bay, after William Henry, son of George II, first Duke of Gloucester, but the name never came into general use.

Simcoe himself is commemorated by Simcoe county, which was called after him in 1798, two years after he had returned to England.

Mount Armour situated on the International Boundary between British Columbia and Alaska has an elevation of 8,776 feet. It is named after Hon. Mr. Justice John D. Armour, Chief Justice of the High Court of Ontario, who was one of the original Canadian members of the Alaskan Boundary Tribunal in 1903.



Success of Canada's Indian Farmers—Not only are the Indians on our western reservations producing large quantities of grain but they are also raising increasing herds of high grade cattle. The above is a photograph of a shipment from the Duck Lake Agency, Saskatchewan, which won first prize at the Moose Jaw Stocker and Feeder Show last autumn.

## LURE OF CANADA'S VACATION LANDS

(Continued from page 1)

Dominion these motor roads contribute largely toward the development of her recreational resources.

Few countries in the world possess such magnificent and diversified natural scenery or such inviting summer and winter vacation areas as Canada. Fortunately for the inhabitants of the large cities of America nature has bounteously provided immense playgrounds in her wide expanses of mountain, lakeland, forest, and river. National and Provincial parks covering an area in the neighbourhood of 25,000 square miles and ranging from the Atlantic seaboard to the Pacific coast, are all easily accessible either by rail or motor road or both and provide the tourist with exceptional opportunities for varied recreation. The huntsman, fisherman, camper or canoeist will find in Canada's hinterland great stretches of primeval forest, rolling plain, and mountain range, the natural haunt of moose, deer, caribou, bear, bighorn sheep, mountain goat and other native game animals; beautiful lakes and countless swift-flowing rivers affording an opportunity for some of the very best fishing to be found anywhere in the world.

From a historical viewpoint Canada occupies a unique position among the countries of the world. Some of the most romantic and interesting episodes in the history of North America afford an extensive field for study to those interested in the early history of the continent. There still remain, in many districts throughout Canada, visible evidences of early conflict in ruins which have been preserved; and there may be found original forts, block-houses, powder magazines, guard houses, and listening posts as well as other evidences of early important events which have direct bearing on the political, economic and industrial progress of the country.

Taking into account the scope and variety of the attractions found from coast to coast and from the International Boundary to beyond the Arctic circle, there is every reason for the view that the natural assets which have been indicated above will prove to be one of the major forces of Canadian development in the future.

## OIL AND GAS PRODUCTION IN WESTERN CANADA

(Continued from page 1)

tapped, thus clearly showing that the original strike in Royalite No. 4 well was not, as supposed by some, confined to a pocket. Production from the dolomite shows no tendency to diminish, indicating the presence of a vast source of wet gas. Seven wells have already reached this reservoir and the encouraging results have induced the Royalite Company to start its No. 10 well, while independent operators are also active.

Drilling continued in the Ribstone and Wainwright fields, and in the latter, one gas well was struck with a measured yield of 15,000,000 cubic feet per day. The most important development outside Turney Valley so far as oil is concerned, was the striking of good production in the Ellis formation at the Devenish well near Skiff in southern Alberta. This opens up great possibilities over a wide area which are being taken advantage of, and drilling will shortly begin.

In addition to drilling aimed directly at the tapping of oil and gas formations, diamond drills were in operation in connection with detailed geological investigation of various areas. Valuable data for the further development of the latent resources of these fields were obtained and the accumulation of this information may be said to be one of the features of the past year's work. The result of this research will lead to the selection of favourable areas for future drilling—at times a difficult matter owing to the complex structural conditions of the foot-hills region, and the frequent masking of underlying formations by glacial drift in the plains area.

As a result of these investigations various structures have been mapped and one important test well has been started at Warner based on information gained. Detailed surface geological work has resulted in the location north of Waterton lakes of the site for another deep hole shortly to be commenced.

The following comparative tables show the increase in oil production and gas consumption in 1927 as compared with 1926:—

Oil Production, Prairie Provinces	
1926 .....	219,598 barrels
1927 (estimated) .....	329,000 "

## AMUSING INCIDENT ON BOUNDARY SURVEY

### Cook Dispatches Marauding Bear With a Boulder—Exciting Experiences Common

So inseparably a part of the day's work have become the accidents and trials of the surveyor or engineer in Canada's great unexplored regions that the recording of exciting incidents in forest or on stream seldom occurs to these forerunners of settlement and development. An encounter with wild animals or a mishap on a turbulent river is as commonplace to him as the narrow escape from collision with a speeding auto is to a city dweller—an exciting and sometimes exasperating incident at the moment but one hardly worth recording.

And so it is that many interesting events in the field experience of Canadian surveyors and engineers never come to light. The following incident, which occurred during the triangulation by geodetic engineers of a section of the International Boundary line along the 49th parallel, is typical of what is encountered by many survey parties during a season's operations.

The party in question consisted of the usual engineers, rod-men, labourers, and cook. The latter was a Chinaman and around him this incident centres. The work of surveying and monumenting had been completed on one portion of the line and the camp was moved forward seven miles to continue it. The cook was hustled off to make ready the noon meal and on his way he encountered a black bear. A spaniel, the cook's pet, was accompanying him at the time and it immediately rushed at the bear. The cook also attacked the forest denizen, assuming the best defensive action to be the offensive. There were no firearms handy and the cook had to resort to primitive methods. Frying pans and other cooking utensils were brought into play, while the spaniel annoyed the bear incessantly. The cook retreated to the top of a ten-foot cliff where boulders abounded. The bear halted below and endeavoured to beat off the attacks of the dog, and taken off his guard, Bruin was laid low with a well-directed boulder. The surveyors reached the scene in time to mercifully dispatch the fatally injured bear.

Many and varied are the experiences of Dominion Government surveyors and engineers during their months of work and travel in the newer parts of Canada and not always are they as amusing as the one related above. The loss of complete camp equipment in running rapids, the breaking of caches by animals, and other such misfortunes of the trail have been reported, but these and many others are all considered just part of the day's work.

### Gas Consumption in Million Cubic Feet (Estimated for the last month of 1927)

	1926	1927
Calgary District.....	4,819	5,671
Edmonton District.....	1,782	2,336
Medicine Hat District....	2,560	2,885
Redcliff District.....	400	435
Totals .....	9,561	11,327

### Alfalfa a Hardy Fodder Plant

Alfalfa from Canadian-grown seed has been cropped successfully at Fort Vermilion in northern Alberta, a distance of 650 miles north of the International Boundary, where very low temperatures are frequently experienced in winter.



# NATURAL RESOURCES CANADA

PUBLISHED BY  
THE DEPARTMENT OF THE  
INTERIOR

HON. CHARLES STEWART,  
Minister

W. W. CORY, C.M.G.,  
Deputy Minister

Natural Resources, Canada, is published monthly for the purpose of promoting interest and supplying information respecting Canada's natural resources and their development. Inquiries respecting any matter or document dealt with should be addressed to

The Secretary,  
Department of the Interior,  
Ottawa.

This bulletin is also issued in French.

OTTAWA, FEBRUARY, 1928

## CANADIAN FOREST INDUSTRIES SHOW RAPID PROGRESS

(Continued from page 1)

basis is of little or no avail. My attention has been called recently very forcibly to the lasting effect of forest fire damage. Surveys made of pulpwood lands around lake Winnipeg have clearly shown that, so far as pulpwood content is concerned, the area is disappointing. It had been hoped that not only would the supplies be sufficient to provide for an important pulp and paper development already installed, but also for additional mill capacity. In fact, the very extensive tracts of forest lands tributary to lake Winnipeg should have been able to support several mills, had not the area been subjected to very disastrous fires. Over wide reaches not only has the timber been destroyed, but the soil itself so injured that it is incapable of supporting tree growth.

"The net value of the forest products from the camps, mills, and factories is estimated to be not less than \$475,000,000. There are over 6,900 manufacturing establishments in which wood, or paper, is the principal basic material used. These plants employ 125,000 people and distribute annually about \$150,000,000 in wages. In addition over 50,000 men are employed in the woods operations for at least part of the year. In eastern Canada this employment is provided in the winter months when the demand for labour in agriculture and many of the industries is slack.

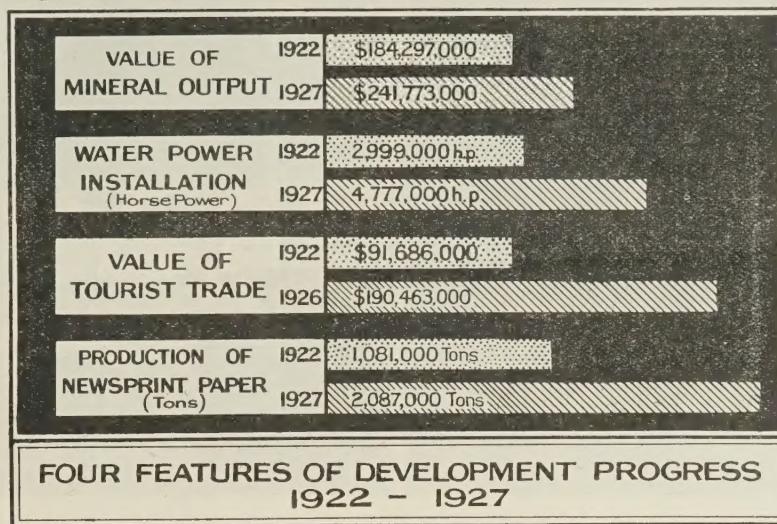
"During the last fiscal year our exports of forest products (exclusive of printed matter) were valued at \$283,092,932, ranking second only to agricultural products. Our imports amounted to only \$34,221,276, leaving a favourable trade balance in forest products of \$248,871,656.

"In our trade with the United States, forest products provided a larger balance than any other class of products, amounting to \$211,345,861. This surplus has been the principal factor in maintaining in favourable position the exchange value of our currency in the United States. It is worthy of note that, with the single exception of British sterling, Canadian currency is reported to be the only foreign money to stand above par in New York, since the war.

"The past year has witnessed a great expansion of the pulp and paper industry. Though already the most important manufacturing industry in Canada as measured by the value of the products and the wages distributed, four new newsprint mills with a daily capacity of 1,100 tons have started opera-

## CANADA'S BROAD-FRONTED ADVANCE

Varied Resources Spell Diversity in Avenues of Business Growth



Natural Resources Intelligence Service  
Department of the Interior

Seldom has Canada's business outlook shown such a volte-face as has occurred in the last few years. Six years ago the Dominion struggled in the depths of depression. Today prosperity is at a high level, and the year 1927 has been authoritatively labelled as "the most expansive year in business enterprise that this country has ever known."

Many factors have had a hand in this about-turn—the improvement of world conditions; the series of good crop years; the re-adjustment of prices; the capacity shown by the Canadian people in the face of adversity.

But, back of all these, the Dominion's business recovery has had the inestimable benefit of one special advantage. The Canadian people have been in the fortunate position of possessing a country with great undeveloped resources. They have not, in the same degree as the people of older countries, been compelled to wait and rely upon the revival of old-established industry and trade. They have been able to turn to

undeveloped resources and to speed up the return to prosperity by the creation of new industries, new production and new trade.

Much has been said of the extent of Canada's resources but it has probably been their variety, as distinct from their sheer extent, that has stood the country in greatest stead. New development has been versatile and widely diffused, not confined to one or two lines. And Canadian business has enjoyed a great, cumulative stream of fresh strength drawn from many different sources—from growth in forest industry, in water-power development, in mining, and in tourist trade which is largely attributable to the Dominion's scenic and other recreational resources.

While the comparative figures, for 1922 and 1927, of mining output, installed water-power, newsprint production and tourist revenue cover only four fields, they serve at least to suggest what a powerful and versatile impetus Canadian business has derived in the last few years from the extension of natural resources development.

tions and new machines with a capacity of 500 tons have been added to existing plants. The installed capacity for newsprint production has been increased from 7,300 tons to 8,900 tons per day. Several other mills are in progress of construction or proposed and the capacity will be further increased in 1928.

"Canada is now the greatest newsprint manufacturing country in the world and exports more newsprint than all the other countries in the world combined. During the first eleven months of 1927, our mills produced 1,900,690 tons of newsprint, while during the same period the United States mills, which up to 1925 led the world, made only 1,367,595 tons. Though statistics are not available for the other grades of paper or for pulp in 1927, there was over 1,000,000 tons of pulp exported and 376,935 tons of book, writing, wrapping, and other papers manufactured in 1926, and as this production has undoubtedly been maintained in 1927, it is expected that the products of the pulp and paper industry will reach a value of \$250,000,000.

"The great expansion of the pulp and paper industry indicated above is cause for concern as to the adequacy of pulpwood supplies to meet the future demands of the industry. It is my opinion that gross production has been devel-

oped as far as it should be, for the time being at least. Until we are more certain that our pulpwood supplies will sustain the industry on a permanent basis there is no justification for continuation of the rather hectic expansion witnessed in the past few years. Rather, the time is more opportune for concentration of effort upon refinement of methods and the more complete manufacture at Canadian mills of pulpwood extracted from Canadian forests.

"The lumber industry in eastern Canada is experiencing some difficulty due to competition from the Pacific Coast and for some years there has been a gradual decline in the amount of lumber sawn. This, however, is made up by increased production in British Columbia. In the first nine months the off-shore trade of British Columbia totalled 556,442,000 board feet of lumber and 113,089,000 board feet of logs and bolts as compared with 545,814,000 board feet of lumber and 132,004,000 board feet of logs and bolts in 1926, and the indications are that the record shipment of 1926 will be equalled in 1927. Over 230 million feet was shipped by water to the Atlantic Coast of the United States and 49 million feet to Eastern Canada, the balance going to practically all the important lumber importing countries.

## NEW CANADIAN APPLE RECEIVES HIGH AWARD

Melba Apple, Originated at Central Experimental Farm, Wins Wilder Medal

New varieties of apples originated at the Dominion Experimental Farms of the Department of Agriculture continue to attract world-wide attention. The Melba apple, the most recent product of the work carried on at the Central Farm, at Ottawa, has been awarded the Wilder (silver) Medal, the highest award of the American Pomological Society. This follows closely on the high award gained recently at the International Horticultural Exhibition at Brussels, Belgium, and is the eighth medal received by the Horticultural Division of the Central Farm for meritorious varieties of apples.

The Melba apple is an open pollinated seedling of the famous McIntosh. Seed of the McIntosh was saved at Ottawa in 1898 and sown in the autumn of that year. The seed germinated the following spring and the young trees were set out in fruiting rows in the spring of 1901. One of these trees, afterwards called the Melba, fruited in 1908 and, as it was so exceptionally promising, it was named in 1909.

Propagation was begun in the winter of 1908-9 and trees were sent out to experimenters for test in 1911 and since that time. It has now fruited in many parts of Canada and some parts of the United States and has proved very promising under different climatic conditions.

The Melba is a summer apple of handsome appearance, in season before the Duchess of Oldenburg and quite as high in quality as the McIntosh. In colour it is a pale waxy yellow, well washed with bright carmine and crimson, the former being the predominant colour. It has a marked perfume which adds to the attractiveness of this variety, and the tree is hardy in climates as severe as that of Ottawa, bears when young, and is productive.

"The past year has been a most important one in forest products research in Canada. The main laboratory at Montreal had outgrown its limited accommodation at McGill University and was moved to Ottawa to a building well adapted for its work. Only the Pulp and Paper Division was left in Montreal. The Pulp and Paper Association of Canada, in the interests of the development of pulp and paper research, have provided a splendid building in which the Pulp and Paper Division will henceforth be housed. Another building was added to the accommodation of the Vancouver Forest Products Laboratory to permit research work in lumber seasoning, particularly with relation to kiln-drying.

"It is a matter for satisfaction that some of the provinces at least are improving the scope and effectiveness of legislation applying to the forest lands over which they exercise control. Sound forest legislation is obviously a prerequisite of effective administration.

"I cannot close this message without a word of warning that if our place as a great lumber and pulp producing nation is to be maintained, we must eliminate the wanton destruction by forest fires and extract the timber we use in such a way that there will be the least possible waste and the reproductive capacity of the forest left unimpaired."



## LAND OF WATERFALLS AND FERTILE UPLANDS

### Survey of Area Beyond the Peace River Discloses Potentially Rich Country

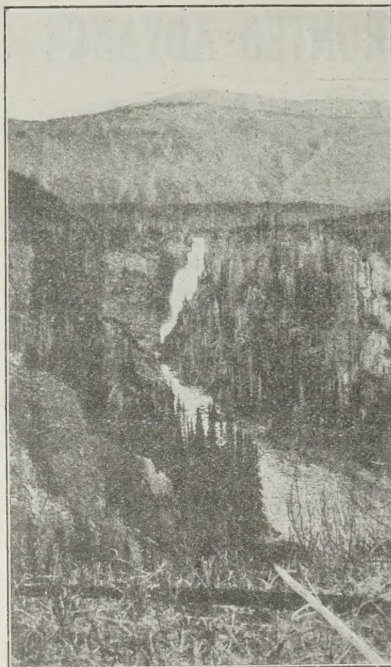
Each year in Canada surveys are pushed farther into the hinterland and each advance discloses valuable resources of which citizens had not previously been aware. The Peace River district has been popularly thought of as the last "inland empire" in that direction but an engineer of the Topographical Survey of the Department of the Interior during the summer of 1927 penetrated west and north of the outermost edge of Peace River and found a land of fertile grassy hills, of high rolling open plateaus upon which roam flocks of Rocky Mountain goat and bighorn sheep and herds of caribou, and where the grizzly bear takes his ease with dignity. The country is drained by clear, cold, fish-teeming rivers and streams which have their rise in the glaciers of the main range of the Rockies to the west.

A train journey of eighteen hours north and west from Edmonton brings one to the town of Peace River, Alberta, on the banks of the river of the same name. Two hundred and fifty miles up the stream from Peace River is Hudson Hope, British Columbia, a Hudson's Bay Company post at the head of navigation for river steamers. The great new country lies beyond, and one of its most interesting natural features, some seventy miles northwest of Hudson Hope, is the falls on the Graham river where the whole stream makes a sheer drop of 220 feet over a perpendicular rock. Another source of wonder is the Nelson river, the most southerly tributary of the Liard river, with its canyon 1,000 feet deep extending forty miles easterly from the mountains. The river itself was crossed on a raft last summer by the exploratory party, a procedure that was fraught with danger and excitement.

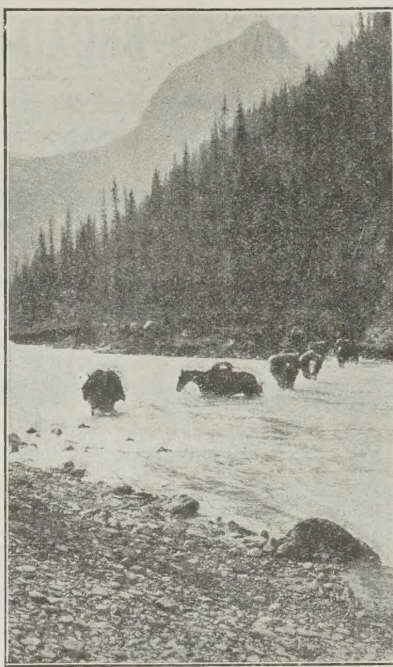
The investigations of the exploratory party extended in general over an area eighty miles west and 175 miles north of Hudson Hope, or, roughly between latitudes 56° and 58° and longitudes 122° and 124°. Fifteen years ago the south-eastern corner of this country, the nearest point to civilization, lay distant from Edmonton a six weeks' journey of hard travelling. Now, with improved rail and steamboat facilities, it can be reached in summer in as many days. The southerly edge of this area was first touched in 1793 by Sir Alexander Mackenzie during his famous overland journey to the Pacific. Later on the more accessible portions of the Peace and Finlay rivers were explored.

In 1897 and 1898 at the height of the Klondike rush, Inspector Moodie of the Northwest Mounted Police cut a pack trail from Fort St. John, B.C., through Laurier pass to Fort Graham and Telegraph Creek in an attempt to locate a trail to the Yukon. In 1911 Major Hart, also of the Mounted Police, made an exploratory trip to the north, but apart from this little was known to the outside world about this country until the return of the 1927 survey party. As a result of the season's work a total of about 10,000 square miles of new territory was covered and information obtained for the issue of a preliminary map.

Over eighty per cent of the paper produced in Canada in 1925 was newsprint. There were 1,536,523 tons manufactured, valued at \$106,268,641.



Land of Waterfalls and Fertile Uplands—(Left) An unnamed waterfall on the Graham river in the country beyond the Peace River district. The river takes a sheer drop of 220 feet at this point. (Right) A pack train crossing Prophet river near its source in the unexplored portions of northeastern British Columbia. This river had to be crossed and recrossed in making a trail for the survey party.



## CANADA AS A HONEY- PRODUCING COUNTRY\*

### Product of Our Apiaries Held in High Regard —A Survey of the Dominion

That Canada is a wonderful country for beekeeping is now an undisputed fact, due chiefly to her wide range of flora and high average of favourable weather for the secretion and ingathering of nectar. Moreover, the greater part of the honey produced in Canada is of high quality, both in flavour and body and, being white in colour, is most suitable for table use.

Until quite recently, beekeeping was practically confined to the older provinces in Eastern Canada, especially Ontario and Quebec, and to British Columbia; the surplus produced by them was absorbed by the Prairie Provinces. During the past five years, however, not only has beekeeping increased in the East but it has made a rapid advance in the Middle West, and because of this growth Canadian honey is now being exported to European markets where it is most favourably regarded. The total crop for Canada for 1925 was estimated at well over 19,000,000 pounds. Of this, Ontario produced 10,000,000 pounds; Quebec and Manitoba each over 4,000,000 pounds; British Columbia 638,319 pounds; and Saskatchewan, Alberta, and New Brunswick each over 100,000 pounds. No record of actual production is available from Nova Scotia and Prince Edward Island but from the total crop estimate given above it will be seen that the production from these provinces is relatively small. The amount of honey produced throughout the Dominion, of course, varies from year to year, according to weather conditions. For instance, 1925 was a very favourable year in this respect for Eastern Canada but not so good for the West; while 1926 was just the reverse, that is good for the West and not so favourable for the East, as the following crop figures for 1926 will show: New Bruns-

wick, 100,000 pounds; Ontario, 5,000,000 pounds; Manitoba, 3,522,512 pounds; Saskatchewan, 170,287 pounds; Alberta, 215,000 pounds; British Columbia, 898,257 pounds. The Quebec figures for 1926 are not yet available. In comparing 1926 figures with those of 1925 it will be seen that, with the exception of Manitoba, the honey crops of the western provinces were much larger in the former year. Reports of the 1927 crop so far received show that in western Canada the past season was even more favourable than 1926; Manitoba reports a crop of 7,386,575 pounds, British Columbia 986,719 pounds, and Saskatchewan 500,974 pounds. Crop reports from the other provinces for 1927 are not yet available.

Comparatively few bees are as yet kept in the provinces of Prince Edward Island, Nova Scotia, and New Brunswick but these provinces contain large areas suitable for honey production. Greater interest, however, is now being shown in this industry, the demand for bees is increasing, and larger apiaries are being maintained. In most localities in these provinces colony production is quite good, in some seasons running well over 100 pounds per colony. In Quebec an increase of 31,827 colonies is shown for the period 1921-26. During the same period the increase in production was 2,619,512 pounds in Manitoba; 164,491 pounds in Saskatchewan; and 589,183 pounds in British Columbia. From 1924 to 1926 Alberta's output of honey increased by 160,000 pounds.

While honey production is steadily increasing throughout the Dominion, there are large areas yet unexploited in so far as beekeeping is concerned; this is especially true of the western provinces. The changing farming conditions in the more settled parts of the Prairie Provinces, the opening up of new territory, and the introduction of irrigation into semi-arid areas, are having an effect on beekeeping possibilities. For instance, the introduction of sweet clover into Manitoba and Saskatchewan is largely responsible for the increase in beekeeping in these two provinces. In the Peace River district, where beekeeping is a comparatively new industry, an experimental apiary at Beaverlodge, Alberta, gave a wonder-

## STUDY OF ATOM AIDS MODERN DEVELOPMENT

### Practical Results From Application of Atomic Theories—Investigations by Astrophysical Observatory

The outstanding development of science in the twentieth century has been the increase in knowledge about atoms, the ultimate particles of matter. Physical investigation has shown that atoms are composed of a relatively massive nucleus surrounded by a cloud of electrons. These electrons, therefore, are a universal constituent of all matter, and the investigation of their properties has been a subject of profound scientific interest. Recently at the Dominion Astrophysical Observatory at Victoria, British Columbia, an examination was made of the mass of the electron and other atomic dimensions from studies of the spectra of some very hot stars. One important result of this investigation was to show that the structure and dimensions of the atom were exactly the same in the hottest and most distant stars as on the earth, an important confirmation of the homogeneity of matter throughout the universe. Thus, by collaboration, largely between physicists and astronomers, the modern comprehensive knowledge of the structure of matter has been built up.

In this respect it may be appropriate to recall how this knowledge has reacted upon the practical life of the community. Modern developments in certain improved X-ray tubes which have revolutionized medicine and certain branches of industry have come directly from an application of modern atomic theories. Again, the recent almost miraculous growth of radio broadcasting and reception is due largely to research on atomic structure.

These important inventions, to say nothing of the modern developments in the reproduction of music, the detection of icebergs by heat rays, and other more or less important devices, are all the outgrowth of modern knowledge of atomic structure, in short these integral parts of present-day civilization are due to research in physics and astrophysics alone.

ful crop during the summer of 1926. A colony on scales registered a gain of 20 pounds per 24 hours on more than one occasion and at the end of the season this colony gave 281.5 pounds of surplus honey, and in addition gave one colony increase. Other pioneer apiaries reported equally good results. In the irrigated areas, where alfalfa and sweet clover are grown extensively, good crops of honey are assured. In British Columbia, the fertile valleys offer splendid opportunities for beekeeping, especially in the central part of the province. In Ontario and Quebec the older parts of the provinces are fairly well stocked with bees but the newer parts of the provinces offer what is practically an undeveloped field.

According to explorers of the Topographical Survey of the Department of the Interior, the predominant bird note of the northern woodlands of Canada, in the latitude of Great Slave lake, is that of the white-throated sparrow, while the plains to the north of this wooded area are always associated with the plaintive song of the Lapland longspur. This friendly little bird is always about camp and follows the traveller on his journey.

\* Prepared at the direction of Dr. J. H. Grisdale, Deputy Minister of Agriculture, by Mr. C. B. Gooderham, Dominion Apiarist.



# NATURAL RESOURCES CANADA

Published by DEPARTMENT OF THE INTERIOR, Ottawa

VOL. 7

MARCH, 1928

No. 3

## MOTORING IN CANADA'S GREAT NATIONAL PARKS

### HIGHWAY MILEAGE IS INCREASED

Number of Motor Tourists to Our Scenic  
Areas Rapidly Growing—140,000  
in 1927

The announcement that approximately 375 miles of high-class motor highways will be open for travel in the Canadian national parks this summer serves as still another reminder of the remarkable developments that have come as the result of modern invention. Last year the number of visitors who entered the mountain parks by motor totalled approximately 140,000. When it is remembered that it is only five years since the first through motor route was opened across the Central Rockies, a better idea of the rapid development of this form of travel can be obtained.

The year 1928 marks, too, another anniversary that provides an interesting measuring point from which the progress of Canada may be realized. It is just seventy years this summer since Dr. (later Sir) James Hector discovered the two passes in the Rockies which were destined later to open the first doors to rail and motor travel. In the summer of 1858, a British expedition under Capt. Palliser, sent out by Her Majesty's Government to discover a possible location for a road in all British territory suitable for the passage of wagons across the Rockies, reached the Bow valley, not far from the present city of Calgary. Before them lay the mountains, a chaotic wilderness of tangled peaks thrusting an almost impenetrable barrier four hundred miles wide between the east and the west. The main route of travel, the principal route followed by the great fur companies and the few rare travellers who were willing to face the hardships of the journey, lay to the north. But this route, by way of the Athabaska pass and the Columbia river offered many difficulties. The pass itself was too difficult for horses and the river presented obstacles and dangers sufficient to make this route an impracticable one.

A few other passes were known to have been crossed by early travellers but maps and data about the character of the country were rare and hard to obtain. When Hector, therefore, undertook the exploration of the Bow valley and the passes beyond, he en-

(Continued on page 3)

## PROTECT OUR FOREST RESOURCES

Royal Proclamation Sets Aside Week of April 22-28 For  
Dominion-Wide Appeal



His Excellency the Right Honourable Viscount Willingdon, Governor General of Canada.

The following extract is from the Royal Proclamation issued by His Excellency the Governor General, setting aside the week of April 22 to 28 as "Canadian Forest Week":—

"WHEREAS the following facts relative to our forest resources are of great importance to every citizen of Canada,

"1. OUR NATIONAL INCOME depends on our forest industries more than on any other source except agriculture.

"2. OUR FOREST INDUSTRIES depend on the timber crops now standing ripe in the forest, and their very existence is jeopardized by any preventable wastage of these supplies. The future of the forest industries depends on the young growth and immature timber of today, and the prosperity of these industries will be in direct proportion to the care and protection afforded this growing timber.

"3. OUR WATER-POWERS depend upon the stability of stream flow throughout the year, the equilibrium of which is disturbed by denudation of the forest cover in the drainage basins, resulting

in alternate periods of flood and low water.

"4. OUR IRRIGATION WORKS demand protection—forests are the fountain-head of irrigation.

"5. OUR AGRICULTURAL LANDS depend on distant watersheds for the maintenance of subsoil moisture during the growing period, and are robbed of productivity by wasteful run-off which occurs when the forests are destroyed.

"6. OUR GAME AND FUR-BEARING ANIMALS depend on the forest for their natural protection, and decrease in numbers or retreat to more remote regions as the forest cover disappears.

"7. OUR TOURIST TRAFFIC depends in a great measure on scenic and other attractions offered in such abundance by the forest and would be seriously affected if verdant woodlands be transformed into desolate wastes.

"AND WHEREAS the safety of Canada's forest resource is threatened by two great dangers:

"(1) Almost universal carelessness with fire in the forest, resulting

(Continued on page 2)

## IMMENSE REINDEER GRAZING AREAS IN NORTHERN CANADA

### VALUABLE DATA SECURED BY INVESTIGATORS

Department of the Interior Seeking Solution  
of Natives' Food Problem—Possibilities of Reindeer

The problem of securing for the native population of Canada's far northern regions a source of food and clothing to supplement that provided by the diminishing wild life is one which has engaged the attention of the Dominion Government for a number of years. The Department of the Interior, which through the Northwest Territories and Yukon Branch, administers the affairs of the natives in the vast expanse of the Northwest Territories, has by lessening the wolf menace and providing game preserves endeavoured to conserve the wild life and provide better hunting conditions for Indians and Eskimos. Although these measures have to a certain extent ameliorated conditions it would appear from reports that further practical assistance must be provided, especially for the Eskimos. To this end investigations have been under way since 1926 to determine whether reindeer herds can be established in the Northwest Territories. The investigations are now well advanced and much valuable and interesting information has been gathered concerning the great northern plains and Arctic coastal regions of the Dominion.

A review of the progress made in introducing reindeer into other parts of the continent for the purpose of providing a supply of food and clothing for the northern aboriginals has shown that the success of such experiments rests almost entirely on the suitability of the area chosen. In Alaska the introduction of reindeer was preceded by an intensive investigation by trained biologists and botanists of the United States Government, and as a result the experiment has proved a great success and the industry is now on a permanent footing. Subsequent attempts by private organizations in northern and northeastern Canada have failed for lack of proper grazing for the reindeer. With a view to ascertaining what areas are best suited for the raising of these animals, the Department of the Interior engaged two brothers, Messrs. A. E. and R. T. Porsild, experienced botanists and Arctic travellers, to inquire into the reindeer industry in Alaska, and to

(Continued on page 4)



## ADVANCE MADE IN ROAD BUILDING IN CANADA\*

### Construction and Improvement of Highways Progressed Under Canada Highways Act

As an aid to the construction of good roads throughout the Dominion, and more particularly toward the building of trunk highways connecting important centres in the various provinces, the Canada Highways Act was passed in 1919 by the Dominion Parliament. By that Act the Government appropriated \$20,000,000 as subsidy to assist the various provinces in the building and improvement of highways "during the five years succeeding the passage of the Act," the purpose being to form a correlated system of highways embracing all the provinces, and connecting with important arteries at International points. The Dominion subsidy was to constitute 40 per cent of the reasonable and necessary cost of construction of the highways placed under agreement as provided by the Act and Regulations. Work, however, did not progress as rapidly as was anticipated, and at the end of the five years an appreciable amount of the money provided remained to be expended. Operations under the statute were accordingly extended until March 31, 1928, by which date the application of this Dominion subsidy will have been completed.

During the nine years that the Act has functioned great strides have been made throughout Canada in the construction and improvement of highways from coast to coast. Every province of the Dominion has benefited from the Act. Of the total of 8,415 miles of highway for the construction of which the Dominion Government agreed to provide 40 per cent of the cost, 7,436 miles were completed by the end of the fiscal year, March 31, 1927. Improvement was being carried out on 872 miles and 106 miles still remained untouched. The estimated subsidizable cost of the work to that date was placed at \$48,990,092, and the Dominion Government's contribution is estimated at \$19,596,388.

During 1926, as in former years, road improvement was carried on along progressive lines, the development being in proportion to the importance of the highway and the character and extent of the traffic to be accommodated at the time, or within a reasonable future. In the western provinces it was found that a considerable mileage, originally intended to be constructed as high standard earth roads, required to be reinforced by gravel surfacing because of increasing traffic. In the eastern provinces, although the Federal subsidy was practically all paid prior to 1926, it was also found that oiling and other dust palliatives were in greater demand in consequence of the heavier traffic.

In addition to the work federally subsidized, the nine provinces have carried on extensive programs of highway construction and improvement, with the result that a total of 5,788 miles of road was improved during the season of 1926, at an outlay of \$29,585,000, made up of federal, provincial, and municipal expenditures. The total amount spent on the improvement and maintenance of Canadian roads during 1926 was approximately \$45,000,000.

\*Prepared at the direction of Mr. George W. Yates, Acting Commissioner, Canada Highways Branch of the Department of Railways and Canals.

## MAPLE SUGAR MAKING IN CANADA

### Indians Taught Earliest Settlers the Art—Syrup is Now Principal Product of the Industry

Canada's aboriginal inhabitants, the redmen, left as legacies not only the canoe, the snowshoe, and the toboggan, but also that valuable article of food and wholesome delicacy, maple sugar. When the first settlers arrived the Indians in springtime brought out their largest pots and kettles and proceeded to make syrup and sugar. The passing

soon became abundant, the two food necessities difficult to obtain were sugar and salt. In addition to their immediate uses these commodities were necessary to preserve foods; sugar for the conserving of fruit, and salt for curing fish and meats. Sons of pioneers have left on record how that, after the year's supply of maple sugar had been made,



Maple Sugar Making in Canada—Boiling maple sap in open kettles. This old fashioned yet picturesque way of making syrup and sugar is rapidly being replaced by modern methods of evaporation.

on of this knowledge was a boon to the settlers, because in a land that was well supplied with fish and game and wild fruit, and in which grain and vegetables

To meet the insistent demands of increased traffic, well organized maintenance branches have been established in connection with each provincial highways department. The total mileage maintained by patrol or gang system during 1926 was 46,824 miles, involving an expenditure of \$15,978,000. In some provinces competitive awards are made for the best maintained sections. This is a practice which might well be encouraged, as it creates interest and rivalry and is an impetus to a higher standard of maintenance.

The development of the motor car and its almost universal use has altered the attitude towards road construction. No longer is it a matter of building roads "where the people are." Roads must be built "where the people want to go," and so not only are the cities and settled parts of the Dominion connected by trunk highways but good roads are reaching out into the hinterland, to the lakeland, the forest area, and threading their way over mountain ranges. The benefits, both social and economic, to be derived from good roads are being more widely realized each year. Through motor tourist travel a new idea of Canada is being spread abroad and a more sympathetic understanding is developing as a result of inter-provincial travel.

the fruits in their season would be preserved in pioneer style. The strawberries, ripening first, would be boiled in sugar and the conserve then poured into a keg and covered with a layer of powdered maple sugar. Following the strawberries came raspberries, blackberries, blueberries, and plums and cranberries, all of which would be treated in like manner; and the hope of the children of the family was that before winter arrived the keg would be quite full of alternate layers of conserve and sugar. In those days no thrifty housewife thought her family's needs were provided for unless she had stored on a high shelf in a cool place a row of "loaves" of maple sugar made by cooling the said sugar in milk pails.

As settlement advanced and population increased maple sugar making came to have a social significance. "Sugaring-off" time was made the occasion for an evening party of young people in the woods, when under the thin disguise of assisting the sugar maker, there was much sleigh-riding, racing of horses to the sugar "bush," eating of hot sugar cooled in snow, paying of forfeits and general jollity. It was in fact a sort of spring festival marking the demise of King Winter. After the season's supply of syrup and sugar had been made, buckwheat cakes and maple syrup became during the spring months the national breakfast dish.

According to the Forest Service of the Department of the Interior the sap of all the maples contains sugar and in

## PROTECT OUR FOREST RESOURCES

(Continued from page 1)

in the destruction, not only of timber and young growth, but of the very soil which produces it.

"(2) The use of wasteful and destructive cutting methods without any thought of ensuring a new crop.

"AND WHEREAS both of these dangers are man-caused and therefore preventable.

"AND WHEREAS it is customary for the United States and Canada to set aside a week in each year during which these matters may be brought to the public attention;

"NOW KNOW YE that we, by and with the advice of our Privy Council for Canada have thought fit to appoint and do appoint the week commencing Sunday, the twenty-second day of April, and ending on Saturday, the twenty-eighth day of April, in this present year, as 'Canadian Forest Week,' which, being also the beginning of another season of travel and recreation in the forest with attendant fire danger, is an appropriate time for the citizens of our Dominion to resolve for another year to recognize the situation as hereinbefore set out, and to give careful heed to information issued by the several Forest Authorities and Agencies in Canada to the end that all may be encouraged to a sustained and patriotic effort in promoting the conservation of this valuable resource, and especially that

"(1) Proper precautions against fire in the forest shall be demanded of all, and carelessness or neglect shall involve the fixing of responsibility on the individual and the application of the penalties provided by law.

"(2) Woods operations shall be so conducted as to provide the best conditions for regrowth of valuable species of timber.

"Of all which Our Loving Subjects and all others whom these Presents may concern are hereby required to take notice and to govern themselves accordingly."

pioneer days, in times of scarcity, even the Manitoba maple, the least productive of the family in this respect, was tapped for the purpose of boiling sap to obtain sugar. In commercial practice, however, only the sugar maple (*Acer saccharum*) is tapped for sugar making.

With the passing of the pioneer stage and the opening of transportation routes the industry became relatively less important and maple food products—sugar, syrup, butter, and cream—are now generally considered luxuries, but with increasing population and wealth the market is continually broadening. The most popular form of the product of maple sap is syrup, the manufacture of which has now reached a high state of excellence and efficiency. It is sold in sealed containers, glass jars, and bottles, and, like honey, has its light and dark varieties. Most people like the thin almost colourless liquid, but others, remembering happy days in the woods, prefer a thicker syrup with a rich amber colour and a good "bouquet," and the modern maple sugar maker is able to supply both demands.

Maple syrup and sugar bring a breath from the stirring days of our early history. Indians, furs, and log cabins are recalled by the inimitable flavour of this truly Canadian product. The making of maple delicacies is a woods industry which conserves the forest, and whether the operations be conducted in the most modern plant, or in the old-fashioned sugar-house, the product is redolent of thrilling adventure and glorious romance in early Canada.



# NATURAL RESOURCES CANADA

PUBLISHED BY  
THE DEPARTMENT OF THE  
INTERIOR

HON. CHARLES STEWART,  
Minister

W. W. CORY, C.M.G.,  
Deputy Minister

*Natural Resources, Canada*, is published monthly for the purpose of promoting interest and supplying information respecting Canada's natural resources and their development. Inquiries respecting any matter or document dealt with should be addressed to

The Secretary,  
Department of the Interior,  
Ottawa.

This bulletin is also issued in French.

OTTAWA, MARCH, 1928

## RECESSION OF NIAGARA FALLS VERY GRADUAL

### Spectacle in No Danger Reports International Board—Improvement Work Recommended

The Special International Niagara Board appointed by the Governments of Canada and the United States to determine how the scenic beauty of Niagara falls and rapids can best be maintained, and, consistent therewith, what additional quantity of water might be diverted for power purposes, has made an interim report to Honourable Charles Stewart, Minister of the Interior.

The Board's investigations lead it to conclude that there is no ground for the fear expressed in certain quarters that the Canadian or Horseshoe fall is degenerating into a cascade or destroying itself by cutting a deep "notch." On the contrary, there is every reason to believe that the water-covered part of the Horseshoe will broaden out and the crestline lengthen in graceful curves, and that if still adequately supplied with water the main part of the Horseshoe one hundred or two hundred years hence will present an appearance equal or superior to the present. The Board recommends the construction of suitable works designed to distribute the water over the presently bared flanks of the Canadian fall and to ensure a more dependable flow over the American fall. The tendency towards erosion in the bend of the Horseshoe can be modified by such works and the present scenic beauty of the spectacle enhanced as a whole. The estimated cost of the proposed works is \$1,750,000.

The Special International Niagara Board consists of four members, two from Canada and two from the United States. The Canadian members are Mr. J. T. Johnston, C.E., M.E.I.C., Director of the Water Power and Reclamation Service, Department of the Interior, Ottawa, and Dr. Charles Cammell, F.R.S.C., Deputy Minister of Mines, Ottawa; and the United States representatives are Major DeWitt C. Jones, District Engineer at Buffalo of the United States Corps of Engineers, and Dr. J. Horace McFarland of Harrisburg, Pennsylvania, past President of the American Civic Association and chairman of the Fine Arts Commission of the state of Pennsylvania.

The Board's investigations demonstrated that three principal conditions



Motoring in Canada's Great National Parks—Looking east across the townsite and an arm of Waterton lake to Vimy ridge in Waterton Lakes national park. The new Prince of Wales hotel, which is not shown in this view, is situated on a bluff to the north of the town and overlooking the lake.

have been developing which have reacted directly upon the scenic beauty of Niagara falls, namely: the recession upstream of the crestline; the culmination of a cycle of abnormally low run-off years in the Great Lakes system; and the withdrawal of water for navigation, sanitary, and power purposes.

The mean rate of recession of the Canadian fall has been 3.7 feet per year since 1842 and 2.3 feet per year since 1906, indicating that the Horseshoe fall is now cutting back at a decreasing rate. That the rate will continue to decrease is the opinion of the Board, based on the reports of competent geologists who made an exhaustive study of the rock structure of the escarpment and the data presented by the different surveys made from time to time between 1764 and 1927. The recession of the American fall is negligible. In the time since this fall became separated from the Canadian cataract, the crestline has not receded much, if any, more than the dry crest of the adjacent walls of the gorge, and no increase in flow which may be considered within reason will change the situation.

The most serious injury to the spectacle as a whole is the progressive laying bare of the flanks of the Horseshoe, where they rest on the Goat Island and Canadian shores. The other principal injuries consist in the thinning out of the American fall and of the rapids above both falls.

The initial remedial works proposed by the Board consist of the removal of exposed shoals above the Horseshoe fall in conjunction with the construction of submerged weirs lying diagonally and irregularly across the current, with incidental and co-ordinated excavation work designed to deflect water from the heavy currents so as to distribute it more evenly over the crest. The lack of volume of the American fall can be remedied by the construction of a submerged weir or weirs located upstream from Goat island. Such construction will ensure an adequate flow over the fall and will be quite inconspicuous.

The results to be anticipated from the construction of the works on the two flanks of the Canadian fall will be the insurance at all seasons of an unbroken crestline from shore to shore, the maintenance of the present blended green and white colour effects of the Horseshoe fall and, in some propor-

tionate measure, a modification of the rate of erosion in the bend.

### MOTORING IN CANADA'S GREAT NATIONAL PARKS

(Continued from page 1)

tered an almost uncharted wilderness. The story of his adventures of the exploration of the Vermilion pass, of the hardships, sufferings and almost death which he endured on the west slope of the Rockies, and of the final discovery by the little band of starving men of the famous Kicking Horse pass, provides one of the most thrilling chapters in Canadian history. Strangely enough the latter pass was not thought worthy of a single line of commendation in Hector's final report, while the Vermilion pass, he stated, was the most suitable, in his opinion, "of all passes in the Rockies for the location of a road." Yet it was the Kicking Horse pass which was finally chosen for the route of the Canadian Pacific railway and in a little less than twenty-eight years from the time of Hector's discovery, the first transcontinental train from the east went roaring through the mountains and the first artery was opened by which the life blood of the Dominion could flow uninterruptedly from coast to coast.

From that day, for nearly forty years, the railway provided the only means of travel across the mountains. The completion of the Banff-Windermere Highway in 1923 across the very Vermilion pass discovered by Hector opened a new chapter and made a way for the open-air, open-sky mode of travel which has brought new life and enjoyment to hundreds of thousands in the last few years.

Since the completion of this first new route, many other developments have taken place. The opening of the Kicking Horse Trail provided another motor crossing of the central ranges and threw open one more national park to this form of travel. Today a distance of less than one hundred miles remains to be covered to complete the long-talked-of project of a motor highway in all Canadian territory from the plains to the coast. These few years have seen, too, the linking up of Waterton Lakes national park with the Glacier park, Montana, by motor highway and the building of the luxurious Prince of Wales hotel in this formerly little-known reservation.

## MAINTAINING BOUNDARY LINES OF DOMINION

The International Boundary between Canada and the United States, including Alaska, is 5,500 miles in length, and the task of permanently maintaining this boundary in a state of effective demarcation was made one of the functions of the International Boundary Commission by a treaty signed in Washington on February 24, 1925.

The two sections of the boundary first to receive the attention of the Commission under this treaty were the Quebec-Vermont line and the New Brunswick-Maine line between the source of the St. Croix river and the St. John river.

Both of these lines lie in thickly settled districts where roads are numerous and in good condition, where there is a great deal of traffic crossing and recrossing the border, and where much business is carried on between the communities in the two countries. Consequently it is of great importance to the customs and immigration officials of both countries as well as to the general public, to be able to recognize easily the exact location of the boundary at any point.

These sections of the boundary were first surveyed between the years 1842 and 1845 by a joint British and United States Commission. They were resurveyed, the vistas were re-opened, and many new monuments were erected in the years 1906-1908. During the twenty years which have elapsed since that time the vistas became filled up with new growth and could be distinguished only with difficulty, while the action of floods and forests and of thoughtless or malicious persons had caused many of the monuments to deteriorate.

A small party was, therefore, engaged on each of these two lines during the past season repairing the monuments and reopening the vistas so that no one anywhere in the vicinity of the boundary need be in doubt as to its exact location.

It is the intention of the Boundary Commissioners to have the vistas reopened and the monuments repaired periodically on the various sections of the boundary, a certain amount of such work being done each year so that the entire boundary may be kept in that state of effective demarcation required by the treaty of 1925.

In Jasper park the new motor highway now reaches from Jasper to the eastern gateway of the park where it will probably soon meet the highway from Edmonton. In Rocky Mountains park, Banff has become the motor gateway to the passage of the Rockies. Its streets are thronged with cars from every part of the continent. To meet the needs of the increasing stream of travellers, motor campsites, bungalow camps, moderate-priced inns, and tea-houses have sprung up like magic along the highways. Even the exclusive region of Lake Louise now provides the more simple forms of accommodation and makes it possible for motorists to enjoy the wonders of this beautiful resort in an inexpensive way. Each year the highways are being improved and the more difficult stretches widened, viewpoints cut at the more spectacular places, trails made to neighbouring glaciers or waterfalls, more provision made in every way for the comfort and pleasure of visitors, so that today the "passage of the mountains" is a delightful experience, within reach of everyone who owns a car.



## GAME OFFICERS HOLD IMPORTANT CONFERENCE

Conservation Problems Discussed at Meeting  
of Provincial and Dominion Officials

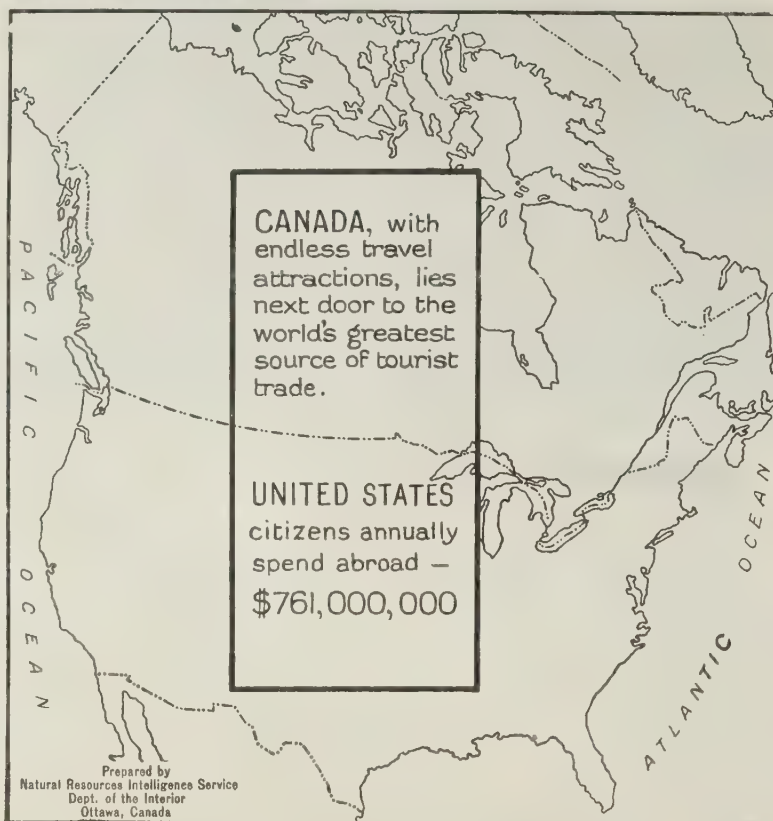
The growing national importance of wild life conservation to both the provinces and the Dominion as a whole was evident from the representative attendance at the recent conference of Provincial and Dominion game officials, held in Ottawa on January 24, 25 and 26. The meetings were held at the invitation of the Hon. Charles Stewart, Minister of the Interior, and all of the provinces and the several federal departments interested in game protection were represented. This conference, which may be described as a periodic stock-taking of Canada's wild life resources, discussed the many problems which face game conservationists in the Dominion today. The conference resulted in a better understanding of the changing conditions in the different parts of the Dominion and opened up new avenues for co-operative action on common problems.

In the unavoidable absence of Hon. Charles Stewart, Hon. Dr. King, Minister of Health, opened the conference with an address of welcome to the delegates. He referred to the importance of the fur bearers and game of the country and stressed the necessity for unity and co-operation in conservation. Mr. J. H. Evans, deputy minister of Agriculture for Manitoba; Mr. M. B. Jackson, chairman of the Game Conservation Board of British Columbia; and Mr. C. K. Howard, General Tourist Agent, Canadian National Railways, in turn occupied the chair at the different sessions. Mr. Hoyes Lloyd, Supervisor of Wild Life Protection, Canadian National Parks, Department of the Interior, acted as secretary.

The program of the conference included such important matters connected with the administration of Canada's resources in fur, game animals, and bird life as: sale of game, the effect of haying and grazing on bird life, tourist business, and hunting privileges. The conclusions arrived at by the conference were expressed in the form of resolutions, fourteen in all, which dealt with the following matters: changes in provincial regulations respecting the hunting of game mammals and birds, the reduction of daily and seasonal bag limits, the prohibition of autoloading firearms, the licensing of hunters, and the recording of all game killed and taken; the formation of a Dominion Fish and Game Protective Association which should have a national headquarters with provincial and district branches for the common object of conserving fish and game in co-operation with the constituted authorities; further protection for the wood duck until January 31, 1931, with the setting aside of sanctuaries for this species; the establishment of a further number of public shooting grounds; an amendment to the Migratory Birds Convention Act Regulations in respect to damage done to crops by migratory birds; the better protection of Western bird sanctuaries through fencing and the control of predatory birds and mammals; and the better control of game trophies taken in Canada for shipment to foreign countries.

The effect of the disappearance of wild life on our Indian population was also discussed and the conference pledged its support to a policy of setting aside, in unsettled regions, suitable areas

## CANADA WELCOMES THE TOURIST AS THE NATION'S GUEST



If the volume of United States tourist travel continues to grow at anything like its recent rate, it will be only a matter of two or three years until the amount of money expended by Americans abroad reaches the colossal sum of a thousand million dollars a year. For 1926, according to the United States Department of Commerce, the outlay of American tourists was roundly \$761,000,000—or nearly twice as much as the Dominion Government collects in tax revenues in an ordinary year.

Canada's position in relation to this trade is one of matchless advantage. Already our tourist business represents a big item, the expenditures of tourists in the Dominion amounting to roughly \$260,000,000 a year. And there is ample

reason to believe that this total can be doubled in the next ten years. Canada possesses an endless variety of attractions for holiday seekers of all kinds, plus a 4,000-mile frontage facing the country which constitutes the world's wealthiest and largest source of tourist travel. Taken all in all, there is probably no other country so favourably situated for attracting tourist trade.

The warm welcome which Canadians extend to visitors is an ever-growing influence in directing travel toward the Dominion. Those who come gladly return again and bring their friends with them.

CHARLES STEWART,  
*Minister of the Interior.*

wherein Indians alone may be allowed to trap. It was brought out in the discussion that in many parts of Canada the Indians are still largely dependent upon hunting and trapping to provide them with the means of subsistence, and that the inroad being made by white trappers into these areas was working detrimentally.

The Federal delegates included representatives from the National Parks of Canada, the Dominion Observatory, the Dominion Forest Service, the North West Territories and Yukon Branch, and the Natural Resources Intelligence Service of the Department of the Interior; and from the Departments of Agriculture, Indian Affairs, Marine and Fisheries, Mines, Trade and Commerce, and Post Office.

The provincial and other delegates attending the conference included:

Prince Edward Island.—J. W. Boulter, Deputy Minister of Agriculture.  
Nova Scotia.—Otto Schierbeck, Chief Forester.  
New Brunswick.—G. H. Prince, Deputy Minister of Lands and Mines.  
Quebec.—L. A. Richards, Deputy Minister of Colonization, Mines and Fisheries; J. A. Bellisle, Superintendent of Game and Fisheries; I. Heckt, Game Inspector.  
Ontario.—G. Rapsey, Department of Game and Fisheries; J. W. Coffey, District Inspector of Game and Fisheries for Ontario; G. S. Leach, Provincial Game Warden; P. Stevenson, District Game Warden.

Manitoba.—J. H. Evans, Deputy Minister of Agriculture.

Saskatchewan.—F. Bradshaw, Game Commissioner.

Alberta.—Benjamin Lawton, Game Commissioner.

British Columbia.—M. B. Jackson, Chairman, Game Conservation Board.

Canadian National Railways.—C. K. Howard, General Tourist Agent.

Canadian Pacific Railway.—A. O. Seymour, General Tourist Agent.

Mr. Paul C. Redington, Chief, Bureau of Biological Survey, United States Department of Agriculture, Washington, D.C., U.S.A.

Mr. David C. Mills, Director, National Association of the Fur Industry, New York, N.Y., U.S.A.

Mr. J. F. Gould, State Game Commissioner of Minnesota, St. Paul, Minnesota, U.S.A.

### IMMENSE REINDEER GRAZING AREAS IN NORTHERN CANADA (Continued from page 1)

investigate grazing possibilities in the Mackenzie District and along the Arctic coast to the east.

In May, 1926, the investigators left Ottawa for Alaska, and spent nine

## TO ERECT MONUMENT TO LATE DR. DAWSON

United States Citizen Pays Tribute to Work  
of Noted Canadian Scientist

As a tangible tribute to the thoroughness and accuracy of the exploratory and geological investigations of the late Dr. G. M. Dawson, at one time a member and later Director of the Geological Survey of Canada, a monument is to be erected by Mr. Fenley Hunter, of New York, U.S.A., on the bank of the Liard river in Yukon territory.

Mr. Hunter's desire to pay this tribute to one of Canada's worthy and unostentatious officials was conveyed to Honourable Charles Stewart, Minister of the Interior, and through him brought to the attention of the Privy Council. An Order in Council was passed setting aside a parcel of land as the site of the memorial, which will closely conform in design to the general style adopted by the Historic Sites and Monuments Board of Canada.

The site is on the right bank of the Liard river immediately north of the boundary between the Yukon territory and the province of British Columbia, a point difficult of access and remote from regular routes of travel. The late Dr. Dawson was one of several explorers of the Geological Survey, who many years ago penetrated to the less accessible parts of Canada and made maps and reports that are still the most authoritative sources of information on the areas traversed. The Stikine, Dease, Liard, Frances, Pelly, and Lewes rivers were surveyed by Dr. Dawson forty years ago, and in 1923, Mr. Fenley Hunter traversed this region while on a big-game hunting trip. He was greatly impressed with the accuracy of the surveys in that remote part of Canada and his admiration for this "builder" who whether his work was seen or unseen "always wrought with greatest care," aroused in him the desire to place some monument as a mark of his esteem for this early Canadian explorer.

months in that territory looking into general conditions and making a thorough first-hand study of the reindeer industry. They then moved along the Arctic coast, which route had been recommended by Alaskan authorities as the one most likely to prove suitable for the driving of herds to Canadian territory and during the journey they made a careful investigation in this particular.

In March, 1927, the Porsild brothers reached Aklavik and began their investigations in Canada. An area of about 15,000 square miles lying east of the Mackenzie River delta and inland from the coast was surveyed as a possible reindeer-grazing area. It is reported to compare in every respect with the best types of reindeer pasture in Alaska, with plenty of forage and water, and is conservatively estimated as sufficient to provide grazing for 250,000 reindeer.

This year the reindeer investigations will be continued in the area to the north of Great Bear lake. So far the reports from the investigators have been very satisfactory. The problem of providing sustenance for the Eskimos is becoming more pressing and the introduction of the reindeer into certain parts of the Northwest Territories is looked upon as a possible solution.



# NATURAL RESOURCES CANADA

Published by DEPARTMENT OF THE INTERIOR, OTTAWA

VOL. 7

APRIL, 1928

NO. 4



Rt. Hon. W. L. Mackenzie King  
Prime Minister



Hon. Charles Stewart  
Minister of the Interior



Hon. R. B. Bennett  
Leader of the Opposition

We are the trustees, not the owners, of our forest heritage; to keep faith with the future we must use it wisely and guard it from waste through preventable forest fires.

*W. L. Mackenzie King*

Canada's forests provide employment, stimulate business, and yield rich dividends in health and pleasure. Fire is their enemy. Carelessness with fire is criminal and offenders are justly subject to the penalties provided by law.

*Chas Stewart*

Forest loss by fire is total waste. Industrial depletion can be replaced by yearly growth and reforestation. Care in starting and extinguishing fire would almost entirely prevent this waste of a heritage of which we are but trustees for generations of Canadians yet unborn.

*R. B. Bennett*





## TO EXCHANGE SPEAKERS FOR FOREST CAMPAIGNS

United States and Canada will Co-operate  
in Continent-wide Appeal,  
April 22-28

Arrangements have been completed by the Honourable Charles Stewart, Minister of the Interior, with the United States authorities for an exchange of speakers during the Forest Week campaigns which are being conducted concurrently in the United States and Canada during the week of April 22 to 28. The Canadian Clubs are co-operating, and Hon. Theodore Roosevelt, chairman of the American Forestry Committee, will address the Canadian Club at Ottawa, and Colonel W. B. Greeley, Chief Forester of the United States, will speak before the Canadian Club at Toronto. Hon. Charles Stewart goes to Washington to address a joint meeting of the Chamber of Commerce of the United States and the American Forestry Association. A national hook-up of American radio stations has also been arranged and Mr. Stewart will follow the President of the United States in a broadcast address.

Hon. T. A. Burrows, Lieutenant Governor of Manitoba, will speak before a convention of the International Order of Hoo Hoo, the largest lumbermen's fraternal organization on this continent, at their international headquarters in St. Louis, Missouri. Hon. William Finlayson, Minister of Lands and Forests for Ontario is to address the Canadian Club of New York City and Hon. T. D. Pattullo, Minister of Lands and Forests for British Columbia, is going to Portland, Oregon, to speak before the Chamber of Commerce in that city.

Negotiations are in progress for additional United States speakers to come to Canada, and for other Canadians to address further meetings in the United States. The forest problems with which the speakers are individually concerned will provide the topics of these addresses.

### Heavy Annual Forest Loss

The annual drain on the forests of the Dominion through fire, insects, and disease is appalling. The annual loss through the operation of these insidious factors is a little greater than the amount of timber annually used in all branches of the industry.

### Keep Camp-Fires in the Open

The low branches and dense foliage of the white spruce afford an attractive shelter to the camper in bad weather and, unfortunately for the safety of Canadian forests, under the protection of its drooping crown is the favoured site for the camp-fire. Camp-fires so placed have been responsible for much of the Dominion's forest loss. The true woodsman or camper who has the welfare of the forests at heart will recognize the danger of this practice, and will place his camp-fire in the open on bare rock or on mineral soil scraped clear of inflammable litter.

### Annual Drain on Our Forests

The forest resources of Canada are being depleted at the rate of about 5,000,000 cubic feet annually, through cutting, fire, insects, and decay. If the reproduction and young growth are not protected, the stand of merchantable timber accessible for exploitation will not withstand this drain for more than a quarter of a century.

## CANADIAN FOREST WEEK, 1928

### Facts and Figures of General Interest Concerning Our Forest Resources

Through the Dominion and Provincial Governments, the people of Canada own 92 per cent of the forest land of the Dominion the remaining 8 per cent being privately owned. Although Canada still retains control of much the greater part of her forest land, the more valuable and accessible timber in the public forests, amounting to about 40 per cent, is under license to operators. However, the people have a substantial interest and exercise regulative control.

Our game animals attract foreign tourists and induce Canadians to seek pleasure, health, and adventure in the great outdoors. These animals are distinctly a forest resource—utterly dependent on it for protection and food. Forest fires are therefore very destructive of such wild life.

Canada has easily the finest inland fishing in the world but our splendid food and game fish require plenty of clean, cold water in order to ensure



The danger which threatens our forest industries through carelessness with fire is typified in this scene in one of the big lumbering centres of the Dominion. The health, happiness, and prosperity of a large section of our population are annually endangered by preventable fires.

The direct revenue received by the Federal and Provincial Governments from their forests in the form of rentals, royalties, stumpage charges, etc., amounts to about \$15,000,000 annually. In addition, the wood-using industries contribute through property, income business, customs, and other taxes a large proportion of municipal, provincial, and federal revenues.

The only economic use for one-third of the land area of the Dominion is in the growing of wood.

The total stand of timber in Canada, including all species both hardwood and softwood and without regard to their accessibility is placed at 242,127,000,000 cubic feet. This total is made up of 457,880,000,000 feet board measure of saw material and 1,289,070,000 cords of pulpwood, fuelwood, etc.

Insect-killed timber dries rapidly and adds seriously to the fire hazard. Fire-damaged timber forms a favourite breeding ground for certain species of injurious forest insects and thus favours their rapid multiplication. Fires, insects, and fungi are taking part in the destruction of Canada's forests; foresters, forest entomologists, and forest pathologists are co-operating in their defence.

By protection and proper management the accessible forest land of Canada could be made to produce in perpetuity several times the present annual cut. It will take many years to bring about this adjustment. On the other hand if present methods continue, the annual cut will have to be reduced.

prolific reproduction, a condition which cannot exist if forest fires are allowed to strip the land, causing drought, erosion, and lack of shade.

Canada is the principal source of softwood supplies in the British Empire.

The forests of Canada form the most important factor in equalizing stream-flow and therefore have immense value in relation to power development. The basic requirement in water-power development is continuity and equability of stream-flow. Flood and low-water extremes not only add to the expense of installation, but greatly increase the cost of operation.

In Canada, the forest is second only to agriculture in the value of its products.

The capital invested in forest industries in Canada is approximately \$675,000,000, one-third of which or a little over \$200,000,000 is in lumbering plants, saw-mills, etc., and \$475,000,000 in the pulp and paper industry.

The forests provide twenty per cent of the entire freight haulage on Canadian railways; supply over 14,000,000 ties annually and almost an equivalent amount of timber for bridges, buildings, etc.; and substantially affect the passenger traffic earnings of the railways through the attraction of tourists.

### Recreation in National Forests

The great and increasing popularity of summer resorts all over the Dominion has been fully shared by the twelve now in operation in the national forests of Canada. Two hundred and thirty cottages already have been erected in these holiday meccas in our national forests, while the tremendous growth in the number of automobile tourists has been recognized by the provision of attractive camping grounds, with bathing houses, shelters, and fireplaces. At one resort the resident population during July and August was 700, in addition to 5,000 campers who were accommodated during the season. Many of the campers came from distant parts of the Dominion and from widely separated districts in the United States.

### Forests of the Future

Although the total forest area of Canada is large (1,200,000 square miles), generations of exploitation and frequent and extensive fires have removed much of the more accessible and valuable supplies of timber. Stands of young growth occupy a considerable part of the forest area, which, if afforded adequate protection, will be a tremendous factor in the furnishing of future supplies for the industries.

### Our Forests and World Consumption

The forest capital of the world is decreasing at the rate of eighteen thousand and million cubic feet per annum, and if consumption continues to increase at the present rate this amount will be doubled in fifty years. In contributing to the world's wood requirements, if Canada is to fill the place predestined by nature she cannot continue her careless treatment of her forests. She must capitalize her forest resources, protect that capital, and use only the amount of annual growth.

### Forest Fires' Heavy Toll

Of Canada's original forest wealth, estimated at 925 thousand million cubic feet, we have cut for use, 13 per cent or 120 thousand million cubic feet; burned, 60 per cent or 555 thousand million cubic feet; and have left 27 per cent or 250 thousand million cubic feet.

### Exploiting Forest Capital

Due to the fact that large areas of the Dominion were at one time endowed with vast timber resources, there has been and still is a predisposition to exploit forest capital. The history of the lumbering, pulp, and other forest industries in Canada has been one of eating into forest capital without sufficient regard to regeneration but of late years more and more attention is being paid to the future of the forest.

### Forest Growth Rate

The popular conception that Canada's forests are growing rapidly is entirely erroneous. In Europe, by intensive cultural treatment, some forests may yield as high as 3 per cent annual growth but in the Dominion, with our unregulated and seriously depleted forests, it is very doubtful whether the rate of accretion is even 1 per cent.

### Rapid Dissipation of Forest Wealth

Canada is dissipating her forest resources at a tremendous rate, and unless definite, radical, and constructive steps in forest conservation are taken, the industries dependent on wood will in the near future be faced with the necessity of curtailing production.



# NATURAL RESOURCES CANADA

PUBLISHED BY  
THE DEPARTMENT OF THE  
INTERIOR

HON. CHARLES STEWART,  
Minister

W. W. CORY, C.M.G.,  
Deputy Minister

Natural Resources, Canada, is published monthly for the purpose of promoting interest and supplying information respecting Canada's natural resources and their development. Inquiries respecting any matter or document dealt with should be addressed to

The Secretary.

Department of the Interior,  
Ottawa.

This bulletin is also issued in French.

Articles may be reproduced with or without credit.

OTTAWA, APRIL, 1928

## CANADA'S FOREST FIRE LOSSES LOWER IN 1927

### Favourable Weather and Increasing Vigilance Result in Record Year

Hon. Charles Stewart, Minister of the Interior, is glad to be able to state that forest fire losses in Canada during 1927 were the lowest in recorded annals. In all 3,766 fires were reported in Canada during the last calendar year and these burned over an area of 481,373 acres, the total damage and loss sustained being placed at \$1,396,055. This low record is equal to about 20 per cent of the loss suffered in 1926.

Although weather conditions had a large influence in the favourable fire season experienced in Canada last year, improved protective organization and the increased care taken by the general public in the handling of fire in the forests were undoubtedly most important factors. The heavy snowfall of the preceding winter followed by copious rainfall and cool weather through the spring months, practically did away with the usually dangerous period that occurs in the month of May. Thereafter the heavy growth of vegetation and frequent showers during the summer combined to produce a phenomenally favourable year in so far as fire hazard was concerned. In the northern parts of Alberta and Saskatchewan and the valley of the Mackenzie river the summer season was very dry and considerable areas were burned over, but with these exceptions Canada enjoyed comparative immunity from coast to coast.

The following table, which is subject to further slight revision, gives the figures for the year 1927 in detail and also by way of comparison the averages for the 5-year period, 1923-7:

	1927	Average for 5 years 1923-1927
Total number of fires ..	3,766	5,317
Total area burned (acres) ..	481,373	2,380,416
Merchandise timber—		
Area burned (acres) ..	114,708	571,579
Timber burned (M.B.M.) ..	538,373	3,894,735
Estimated stumpage value .. .. . \$	831,492	7,510,013
Young growth—		
Area burned (acres) ..	137,124	701,471
Estimated value .. .. \$	193,481	2,287,314
Cut-over—		
Area burned (acres) ..	35,875	448,802
Estimated value .. .. \$	36,449	493,937
Non-forested—		
Area burned (acres) ..	184,171	658,564
Other property burned—		
Value .. .. . \$	91,670	815,977



The fire fiend at work. This picture was taken in the forest limits of one of our important woods industries. Such conflagrations mean fewer jobs and decreased business for citizens of the Dominion.

Actual cost of fire-fighting ..	\$ 242,963	638,644
Total gross damage and loss .. .. . \$	1,396,055	11,745,885

NOTE.—The general high average is due to the exceptional losses in 1923 when the total losses were over \$40,000,000. The average for the last four years, i.e., 1924 to 1927 inclusive, was \$4,463,995.

Following is a summary by provinces.

**Maritime Provinces.**—In Nova Scotia 125 fires burned 128 acres of merchantable timber and 976 acres of young growth along with 1,537 acres of non-forested land, causing a total loss of \$3,338. The total area burned over was 2,750 acres, of which less than 5 per cent carried mature timber.

In New Brunswick 77 fires burned over 2,424 acres of which 20 per cent carried mature timber and 30 per cent young growth. The total loss of timber, old and young, reached a value of \$1,847 and of other property, \$5,686. The loss sustained in this province was only one-quarter of that in 1926 and the lowest on record.

**Quebec and Ontario.**—Although the Quebec statistics for the 1927 fire season were not fully compiled when this report was prepared, the Chief of the Forest Protection Service advised that conditions were most satisfactory and the losses smaller last year than ever before. This favourable summary was fully upheld by the reports of the six Forest Protective Associations which guard an area of 74,258 square miles. The Associations reported a total of 240 fires with almost negligible losses, 1927 being "a record year for low number of fires, small damage to limits, and low cost of fire-fighting."

In Ontario fewer fires occurred than in 1926 and the total area burned over, namely, 35,742 acres, was only 40 per cent as great as the 1926 total, and 20 per cent of that for 1925. There were 924 fires in 1927.

**The Prairie Provinces.**—In Manitoba 110 fires occurred. Eighteen of these were in National Forests but covered only 197 acres out of the total of 26,225 acres burned over. Although the favourable fire conditions which prevailed throughout other parts of the Dominion were experienced in the southern parts of Saskatchewan and Alberta, a period of extreme hazard occurred in the north of these two provinces. This situation accounted for the relatively heavy fire losses reported from northern Saskatchewan. In this province 40 per cent of the fires occurred in or near national forests, and these burned over

10,000 acres, confined largely to hay sloughs, causing only \$8,000 damage. The other 60 per cent, which occurred mostly in the unsettled north country covered approximately 224,000 acres and occasioned a loss of \$755,000 chiefly in pulpwood or cordwood material. In Alberta there were in all 231 fires, only five of which occurred in the extensive national forests where less than three acres was burned over. Eighty per cent of all fires in Alberta were detected and put out before reaching a size of ten acres. The total area burned over was 36,998 acres, of which 6,433 acres carried mature timber and 3,902 acres, young growth.

**British Columbia.**—The year 1927 with its well distributed rainfall brought a welcome relief from the strain and heavy losses of several bad fire years in this province. There were, however, a number of dry electrical storms which caused, on provincial lands, 40 per cent and on Dominion lands 50 per cent of the number of fires which occurred. The total number of fires was 1,478; these burned over 105,956 acres of forest land, carrying 13,004 acres of merchantable timber and 20,193 acres of valuable young growth. The loss in buildings and other property amounted to \$74,944. The losses in 1927 were almost exactly one-tenth of the corresponding losses in 1926.

#### OTHER FEATURES

Although over ten per cent of all the reported forest fires in Canada last year were of railway origin, they were responsible for less than one per cent of the total area fireswept and of the total loss. From Nova Scotia to Yukon 390 railway fires were reported. These burned over 4,181 acres, of which 412 carried mature timber and 906 acres, young growth. This fine record is largely due to the widespread co-operation between the various forest protective agencies and the railways to prevent fire loss.

In parts of Ontario and Quebec and the Prairie Provinces aeroplane patrols were again active and in some cases this feature of forest protective work was extended. The lessened fire hazard over the greater part of the Dominion provided an opportunity for the various services to carry out exceptionally heavy programs of work to improve fire detection and suppression facilities.

Without exception the reports received from every part of the Dominion call attention to the very encour-

## INTERESTING STUDY OF GIANTS OF SPACE

### Dominion Astrophysical Observatory's Large Telescope Reveals Many Stars as Double

Few people know that approximately six per cent, or one in every eighteen, of the stars when viewed through one of our large telescopes is seen to be double. Certain of these double stars are known as eclipsing variables from the relationship of their orbits to the earth, and the most massive of these eclipsing systems, known as H.D. 1337, has been investigated recently at the Dominion Astrophysical Observatory at Victoria, British Columbia. The star was observed by an electric photometer in Germany during 1920, and an accurate determination of its changes of brightness was published. However, this complex curve could not be interpreted for want of precise information obtainable by means of the spectroscopic. When the matter was taken in hand at Victoria Observatory further investigation brought to light an extraordinary system.

The following illustration may help us to visualize this great star. If the earth were a 1-inch sphere—much smaller than a golf ball—the sun would be represented by a great sphere 9-feet in diameter, filling an ordinary room. More than 1,300,000 earth-balls could then be thrown inside such a hollow globe and there would still be plenty of space between them. On this same scale the larger star of this interesting system would be 214-feet in diameter and more than 13,000 sun-spheres and seventeen billion earth spheres would be required to make up its tremendous volume.

Picture, then, these two gigantic globes of flaming gases, practically in contact and revolving about each other every 3½ days, whose orbital velocities exceed 150 miles per second and whose respective masses are 36 and 34 times that of the sun. The surfaces of these stars are at temperatures of 50,000 degrees Fahrenheit, about 20 times that of molten iron. This intrinsically high temperature combined with the enormous surfaces of the stars makes the system 28,000 times more luminous than the sun, and yet, so inconceivably remote is it, that the stars cannot be seen with the naked eye. Light, which travels at the prodigious velocity of 186,000 miles per second, and speeds to us from the sun in eight and a half minutes, requires a journey of 10,000 years to come to us from this extraordinary double star.

aging co-operation between forest services and the public, an evidence that everywhere there is a growing appreciation of forest values and a greater realization of the urgent need of preventing further unnecessary destruction and waste of our forest resources.

#### Ownership of Our Forests

The people of Canada still own outright about fifty per cent of the total standing timber in the Dominion; this, however, consists of the less valuable stands. The more valuable and accessible timber in the public forests, amounting to about forty per cent, is under license to operators.

#### Production in Perpetuity

Given protection from its greatest enemy, fire, and reasonable care in cutting, the forest will continue to yield its bountiful harvest for all time.



## WHY "CANADIAN FOREST WEEK" COMES IN APRIL

Spring is Season of Greatest Fire Hazard  
—Vacationists Are Then Planning Holidays

By Royal Proclamation the week of April 22-28 has been set aside as "Canadian Forest Week." During that period an intensive campaign, urging greater protection and conservation of our forests, will be carried on throughout the Dominion. Every practicable medium of publicity will be used to spread the appeal. Newspaper advertisements, posters, stickers, pamphlets, radio talks, lectures, after-dinner speeches, and playlets will carry the message into the home, the workshop, and the schoolroom so that all Canadians will be reached. All are urged to consider the present state of our forests as set out by the various authorities and to keep in mind the measures set forth for the protection and conservation of our forest resources.

To many to whom the forest protection message comes, the question will naturally present itself, "Why has this season of the year been chosen for the 'Canadian Forest Week' campaign?" There are two main reasons—why the spring and especially the month of April is the best suited for a fire prevention appeal.

The first of these is that over the greater part of Canada the last week in April immediately precedes the period of greatest fire hazard in our forests. By that time the snow has almost entirely disappeared from the woods and a succession of warm, sunshiny days is the rule. The hot rays of the sun beating down on the forest floor through the still leafless trees, turn the dead grass, leaves, twigs, and withered herbage from the last season's growth to tinder, in which the smallest spark may start a conflagration. During the succeeding two weeks the new growth begins to appear and the danger is gradually lessened. There is a second period of fire danger in the late summer or early autumn but this is not usually as acute as that occurring in the spring.

The second reason for choosing the month of April for the forest protection campaign is that at this time of the year most people are making plans for their vacations. Increasing numbers both in Canada and from abroad are making use of our forested areas for recreational purposes and the necessity of impressing them with the need for care with fire in the forests becomes increasingly great with the advent of the summer season. Advice on the proper location of camp-fires and the surest way of extinguishing them; how to dispose of lighted matches, glowing cigarette and cigar stubs, and live ashes from pipes at this time will bear good fruit during the sojourn of campers in Canada's woodland areas.

The fact that in the United States the week of April 22-28 will be similarly observed with a forest protection campaign is a further evidence that all over the continent forest conservationists realize the advantages of making their appeal in the spring of the year. From the Mackenzie to the Rio Grande the Governments of Canada and the United States will lead in urging greater care with fire in the forests and a closer utilization of timber resources to the end that this great and valuable heritage may be conserved for future generations.

## NAKIMU CAVES ARE REMARKABLE

Subterranean Passages in Canada's Glacier National Park  
Provide Thrills For Visitors

Near the summit of the Selkirk Range of mountains in British Columbia is one of the most remarkable series of subterranean passages found on this continent. These passages are the Nakimu Caves in the Glacier National Park, one of the scenic areas administered by the National Parks of Canada, Department of the Interior.

roof and stalagmites grow from the floor. Several of these caves are as large as a ballroom; some have ceilings between 200 and 300 feet high. The names given to several of the principal rooms indicate their characters—The Witches' Ballroom, The Auditorium, The White Grotto, The Marbleway, The Judgment Hall, The



Nakimu Caves, Glacier National Park—View in Cougar valley looking toward the Canadian Pacific Railway Company's chalet near the remarkable Nakimu Caves. Cougar creek is seen in the foreground just before it is caught down into the subterranean passages.

About four and one-half miles west of Glacier station the Cougar Creek valley opens to the north. This is a very beautiful alpine valley opening at its head into one of those high hanging valleys formerly occupied by a glacier, so often found in this part of the mountains. To the north mount Bagheera, Catamount peak and mount Ursus Major, and to the west and south Cougar mountain wall in the head of the valley. All of these peaks are glacier-hung and send down streams which unite to form the little alpine river known as Cougar creek. Soon a stream of considerable size, it comes cascading down the valley through meadows bright with alpine flowers but suddenly it is snatched down into the bowels of the mountains. About 450 feet farther on it reappears, flows for a little in the light of day only to disappear again into subterranean darkness. Three times in the course of a mile it is caught down in this way and then the waters disappear finally by a fourth underground channel. Weird, rumbling noises like low thunder and the sound of rushing waters which may be heard below give rise to the Indian name "Nakimu" which means "Spirit's noises."

From year to year the work of exploring the Nakimu Caves has been carried on and to date four complete series of passageways have been opened to visitors. Some of the chambers, apparently formed partly by seismic disturbances and partly by erosion, are very beautiful. In some cases the walls are encrusted with lime formations in the form of great cauliflower, sometimes tinted cream or salmon pink. In other places stalactites hang from the

Bridal Chamber, The Devil's Hole, The Grand Cavern, and The Wishing Well.

These caves were discovered in the year 1904 by Mr. Charles Henry Deutschman of Revelstoke who was prospecting and hunting for big game in the Cougar valley. The legend is that he had shot and wounded a bear and while following the animal came upon an opening in the rock which led down to a dark chasm below. Cutting and trimming a nearby spruce into a pole Deutschman slid it down the opening until it touched bottom and then descended by this means. Lighting a few matches he was surprised to discover that he was in a large vaulted chamber, through which a subterranean stream could be heard flowing. Realizing it was too dangerous to attempt further explorations without more equipment, Deutschman climbed out of the cave to tell the story of his discovery. A little later a party was organized which was supplied with lanterns and proper equipment, and the cave was thoroughly investigated. What was the surprise of the explorers, however, to find that the first chamber was only one of a series which extended for hundreds of feet under the mountain. Pools of water, more or less filled with ice, were encountered which greatly impeded their progress and finally a very deep one, at a distance of 237 feet from the surface, barred their advance until a raft could be prepared. Retracing their steps to the surface, a new opening was discovered through which they crawled on hands and knees and then descended a deep, narrow water groove for about fifty feet. This led to the brink of a great cavern. The dim light of the

## ORIGIN OF NAMES OF DISTRICTS IN N.W.T.

Mackenzie and Franklin Commemorate  
Great Explorers—Keewatin an  
Indian Name

To facilitate the administration of the Northwest Territories by the Department of the Interior they are divided into the provisional districts of Mackenzie, Franklin, and Keewatin. According to the Geographic Board of Canada the first two names date from 1895 and the third from 1876. "Mackenzie" commemorates Sir Alexander Mackenzie (1755-1820), the explorer of the Mackenzie river. Franklin district, which includes the Arctic islands is named after Sir John Franklin (1786-1847), the great Arctic navigator. Keewatin district extends north of Manitoba and embraces the islands in Hudson bay. The name is an Indian expression, meaning "the north wind coming back," applied by the Crees to a very cold wind which comes up to the lake of the Woods from the south in the winter. It is the same word as Keewaydin used in Longfellow's poem "Hiawatha" published in 1854. The name was suggested by Hon. James McKay, Minister of Agriculture in the Government of Manitoba, 1875-78 and well-known for his assistance in negotiating several Indian treaties.

lanterns revealed below them an abyss opening to a depth of about 250 feet and reflecting gleams from walls of white marble. The plunge and roar of a great waterfall somewhere down in the darkness reverberated through the cavern and added to the terrifying effect of the whole.

Mr. A. O. Wheeler, who was with this party, gives a vivid description of the sensations experienced:—

"At the time of the first exploration the writer took acetylene bicycle lamps, whose bullseye enabled the pitch darkness to be pierced to some extent. Magnesium wire also was lighted, and, by its aid, for a brief minute, the interior was bathed in dazzling brightness. Standing on a narrow ledge that overhangs a black abyss, one's eye is first drawn by a subterranean waterfall heard roaring immediately on the left. It appears to pour from a dark opening above it. Below, between black walls of rock may be seen the foam-flecked torrent hurtling down the incline until lost in dense shadows. Overhead, fantastic spurs and shapes reach out into the blackness and the entire surroundings are so weird and uncanny that it is easy to imagine Dante seated upon one of these spurs deriving impressions for his inferno."

With the limited equipment at their disposal the party found it impossible to go on. A few days later, however, another attempt was made and the caves known as the Gopher Bridge and Mile Bridge series were revealed. Since that time Mr. Deutschman has continued his explorations and has succeeded in discovering several new series of passageways.

Each year the Department of the Interior is making these caves more accessible and safe for the visitor by the construction of railed stairways and passageways. Although by the improvements made the exploration of the caves with a guide is now perfectly safe for visitors the experience remains one of the most thrilling in the national parks of Canada.



# NATURAL RESOURCES CANADA

Published by DEPARTMENT OF THE INTERIOR, Ottawa

VOL. 7

MAY 1928

No. 5

## PROGRAM OF AIR OPERATIONS FOR COMING SEASON

### EXTENSIVE FLYING PLANNED IN CANADA

#### Royal Canadian Air Force Co-operates With Other Departments—Commercial Activities

Each year aviation is playing a greater part in the development and conservation of the natural resources of the Dominion. Aerial transport is solving the most urgent problems of the forester, surveyor, geologist and explorer in their work in the more remote and unexplored parts of the country as well as in the settled districts, and new applications of aerial methods to other lines of research are constantly enlarging the field of usefulness of the aeroplane.

The 1928 program of the Royal Canadian Air Force in civil operations for government departments includes, subject to such alterations as circumstances may necessitate, the following work:—

#### DEPARTMENT OF THE INTERIOR

**Forest Service.**—Provision of twenty hours flying time for emergency fire periods in British Columbia; continuation of air patrol as in 1927 in Alberta; continuation and intensification of aerial patrols over fourteen and a half million acres of forest in Saskatchewan; and continuation of the work in fire prevention and suppression covering forty million acres in Manitoba.

Photographic surveys in the Nelson River watershed in connection with possible pulp and paper development, and in the Saskatchewan patrol area in order that base maps may be prepared for use of air patrols.

**Topographical Survey.**—Vertical aerial photography in connection with mapping the Rouyn, Sudbury, and the Pas mineral areas, and in the Gatineau, Opinaka, and Chicoutimi districts in Quebec; vertical photography in the Shelburne and Guysborough districts in Nova Scotia and the Moncton district in New Brunswick; oblique aerial photography for mapping the Dryden, Quetico, and Rainy Lake districts in Ontario; in Saskatchewan, oblique photography of the Lac La Ronde, Lac Mironde, and Reindeer Lake areas; in Alberta, vertical photography in the St. Ann area, and oblique photography of an area in the vicinity of lake Athabaska; oblique photography to complete the mapping of Wood Buffalo Park near Fort Smith, N.W.T., in co-operation with the North West Territories and Yukon Branch.

(Continued on page 3)

## JASPER PARK HAS STRONG APPEAL

### Great National Playground in Alberta Has Risen Rapidly in Popularity—Accommodation Increased

Among Canada's scenic playgrounds none has more rapidly sprung into notice than Jasper national park, Alberta, which in a few years has attained a continent-wide reputation. Practically every year since the opening of the well-known Jasper Park Lodge, maintained by the Canadian National Railways, it has been found necessary to add to its

lighted, and equipped with all the refinements and comforts found in the high-class hotel.

The new Jasper golf links completed about two years ago have proved a great success and have become for many visitors one of the chief attractions of the park. The course is now in splendid condition and ranks with the finest on



Jasper Park has Strong Appeal—Looking down one of the picturesque avenues between the bungalows at Jasper Park Lodge. Pyramid mountain is seen in the distance.

accommodation. Last year registrations at the Lodge totalled over 10,000 and many times during the busy season the capacity of the Lodge was taxed to the utmost. Inquiries already received point to an even heavier flow of travel this season and to meet the expected demand, steps are being taken to again increase the accommodation so as to provide for 500 additional guests.

The additions to the Lodge will consist of several separate buildings including one for the use of special parties and their accompanying attendants. The new structures will be in the same style as the other buildings. They will be built of native logs, peeled and varnished, with chimneys and pillars made from the ancient boulders, carved by the glaciers of the Ice Age, which abound in the vicinity of Jasper. The wide verandahs will afford beautiful views of lac Beauvert and of the majestic peaks in this part of the Athabaska valley. Like all the other buildings of the Lodge, these will be steam heated, electrically

the continent. This season a golf clubhouse is to be built in the vicinity of the first tee. Although the links are within a few minutes walking distance of the Lodge, it was felt that a clubhouse which would provide a social centre, equipped with lockers, showers, dressing rooms, and lounge, would add to the comfort and convenience of the thousands of golfers who play over this course during the season. How large this patronage is may be deduced from the fact that over 7,500 visitors played over the course last season, an increase of 2,500 players compared with 1926.

Jasper park is pre-eminently a trail riders' park. More than 400 miles of trails are now open to the visitor and the lure of such great regions as those of Maligne Lake, Shovel Pass, Tonquin Valley, and Mount Robson, each year draws hundreds out along the mountain trails. This is undoubtedly the finest way of becoming familiar with the mountains and once visitors discover

(Continued on page 4)

## IMPORTANT WATER POWER MEASURE IS INTRODUCED

### LAC SEUL STORAGE BILL BEFORE PARLIAMENT

#### Manitoba and Ontario to Benefit by Regulated Flow of Winnipeg and English Rivers

A bill, sponsored by the Honourable Charles Stewart, Minister of the Interior, to provide for the securing of water storage in lac Seul, in the upper waters of the English and Winnipeg rivers was passed by the House of Commons and Senate at the present session. The measure gives effect to an agreement made between the Dominion, Ontario, and Manitoba Governments to increase the dependable flow for power purposes of the English river in Ontario and the Winnipeg river in Manitoba. The direct result of the Lac Seul storage will be to add 82,000 commercial horse-power to the English river and 112,000 horse-power to the Winnipeg river.

The agreement represents the consummation of a storage project which the Department of the Interior, as administrator of Manitoba water-powers, has had in view since it began its investigations of the Winnipeg River powers in 1911. The securing of Lac Seul storage is being realized at the time when the increased flow is required by the power installations of the city of Winnipeg and the Manitoba Power Company on the Winnipeg river.

As lac Seul is located wholly within the province of Ontario, the storage dam will be constructed by that province. The capital cost will be apportioned as between the Dominion and Ontario in the proportion of three-fifths to the Dominion and two-fifths to Ontario, this being the ratio of the respective power heads in Manitoba and Ontario benefiting from the stored water. The regulation of the flow through the dam will be placed in the hands of the Lake of the Woods Control Board, consisting of two members appointed by the Dominion and two members appointed by Ontario, and it will be the duty of this board to so regulate the outflow as to secure the most dependable flow and the most advantageous and beneficial use of the same in the interests of both the Ontario and the Manitoba water-powers.

The Government of Canada through the Department of the Interior will provide the necessary funds to meet the Dominion's obligations under the agreement, while the province of Ontario will

(Continued on page 2)



## CANADIAN FOREST WEEK WAS MARKED SUCCESS

Hon. Charles Stewart Delivered Address in Washington and Also Broadcast Radio Message

The success of Canadian Forest Week in 1928 was more marked than in any previous year. The various committees, national and provincial, worked with enthusiasm, and appeals for public co-operation were made through the press, by public addresses, radio talks, references from the pulpits of churches, exercises in schools and in various other ways. By the concurrent proclamations of the Governor General of Canada and the President of the United States the same period, April 22-28, was observed as Forest Week on both sides of the International Boundary. This rendered possible an important feature of the campaign, namely, the exchange of speakers between the two countries. Hon. Charles Stewart, Minister of the Interior, Canada, addressed the American Forestry Association in Washington and, in company with Hon. Calvin Coolidge, President of the United States, broadcast a message over the radio. The text of Hon. Mr. Stewart's radio address is as follows:—

"Citizens of the United States and Fellow Citizens of Canada:

"It is my honour and privilege this evening to extend the greetings of the Government of Canada to the great unseen audience which is now thinking of the problem which Forest Week brings to mind. In so doing I desire to express my appreciation of being associated with the President of the United States in broadcasting a message to residents on both sides of the International Boundary line. The fact that the President of this Nation and the Governor General of Canada have issued concurrent proclamations setting aside the period from the 22nd to the 28th of April as Forest Week, shows that the Governments of both countries realize fully the urgency of forest conservation and recognize how vital it is to the well-being of the people.

"The prosperity of every man and woman on this continent is affected by the total annual production of wealth. The wealth of North America is tremendous but so much of it comes from the forest, that, if our timberlands disappear, then there will be an appreciable shrinkage in the pay-envelope or pocket-book of every man in every community from the Mackenzie river to the Rio Grande.

"Consider what directly depends upon the maintenance of growing forests. The list includes all our great forest industries, such as lumbering, paper-making, building construction, furniture manufacturing, and their scarcely less important subsidiaries; our water-powers, daily becoming more necessary to modern life; our irrigation works; the fertility of our agricultural lands; our fur-bearing animals, fish, and game; and, not least, the great outdoor recreational movement of this generation, so necessary to the maintenance of national health.

"What has burned into my own consciousness and what I would impress upon the consciousness of all who hear me to-night is this: that forest conservation benefits in a hundred ways every person on this continent, and injures not one.

"Fire is the great enemy of the forest and ninety-five per cent of forest fire loss is caused by sheer carelessness—

## WINTER AIDS RAILWAY BUILDERS\*

### Novel Experiment Succeeds in Speeding-up Construction of Branch Line to Flinflon

The railway is one of the greatest agencies in the rapid and economic development of Canada's natural resources. The initiation and subsequent progress of many of the major development operations in the newer parts of the Dominion have depended largely on the provision of rail communication. Much interest is now centred on Flinflon which is situated about ninety miles north and west of the Pas, Manitoba, the nearest railway point. Ordinarily the construction of a railway of this length through sparsely timbered northern country would occupy between two and three years. So important, however, was the element of time that the Hudson Bay Mining Company, the owners of the Flinflon Mine, when the contract for construction was signed on December 1, 1927, offered a cash bonus of \$250,000 if the line were completed and trains running before December 31, 1928. The contractors, therefore, to speed up construction, entered upon the daring experiment of laying the ties and rails of a standard railway on the frozen ground for the first fifty miles; and, dispensing with "tote" roads, they carried in all the materials for the building of the whole road, and all the initial equipment for the mine, before the spring thaw rendered the unballasted railway impassable.

The immensity of the task facing those in charge of the construction of this line may be better realized when the character of the country and the short space of time allowed for the completion of the line are taken into consideration. The first fifty miles of the right of way traverses a compar-

carelessness such as no urban or rural community would tolerate for an instant. Banish fire and the forests, badly scarred as they are, will even yet respond by adequately meeting the needs of industry; but let the fire demon rage on a few years longer and the damage will be irreparable.

"All can help in this movement, not least the lover of field sports. Without the forest to provide shelter and food for the game what possibilities exist for the perpetuation of game animals. It is true that in northern Canada there are unique conditions which seem to insure the perpetuation of game there for all time; it is also true we have always been ready to share that game with our United States neighbours; but if our North American principle of free shooting is to continue the forest must be saved and the sportsman must help to do the saving.

"And how can the forest be conserved? My suggestion is: In the same manner in which the people of the United States and Canada stopped the annually recurring prairie fires of thirty or forty years ago. That is to say, by deciding that fires are too dangerous and too wasteful to be tolerated. That decision crystallized as public opinion, not only in forested regions but also in cities and country places hundreds of miles from the timberlands, and consistently supporting the movement for forest conservation will undoubtedly achieve our object. Let us unite and create such a public opinion in regard to forest fires, and I venture to predict that in five years the problem will be solved."

atively level area marked by muskegs and lightly timbered swamps, sections of which are almost impassable during the summer months. Beyond Mile 50 and to the end of the line, thirty-eight miles further on, the country is broken, consisting of rock ridges with a fair growth of timber and dotted with lakes.

With only a small amount of clearing and levelling, steel was laid on the frozen ground for the first fifty miles, enabling construction to reach the beginning of a system of lakes navigable for scows and rafts, along the shores of which runs the final stretch of this line. During the winter it was possible to operate trains from the main line near the Pas to the head of water transportation and the material required for the completion of the line and for the opening up of the mine was moved in. With the spring break-up the heavy timbers will be floated to the sites of the bridges and the machinery and other materials carried by raft and scow to the various scenes of activity.

Three gravel pits were opened up along the first section of the road, and this spring and during the early summer the work of ballasting and lifting the roadbed will be pushed forward in both directions from each of these three points. Early in the operations camps were erected from Mile 50 to the end of the line at Flinflon and gangs of men were started in on the work of clearing, grading, and bridging. The materials and supplies for this work were taken in from the end of the first section of the railway over a winter sleigh-road, the hauling being done by tractors and horses. Six small bridges have been completed and over the whole line there is enough material now on hand to keep everyone busy until the track is ballasted.

This line is being built by the Manitoba Northern Railway Company under charter from the province of Manitoba. The present directors are officers of the Canadian National Railways, the Deputy Minister of Railways and Canals, and a representative of the Hudson Bay Mining Company. The line will be leased on completion to the Canadian National Railways for a period of twenty years under such terms that at the end of that time the line becomes the property of the operating company.

\*Prepared at the direction of Mr. G. W. Yates, Assistant Deputy Minister of Railways and Canals, Canada.

### IMPORTANT WATER POWER MEASURE IS INTRODUCED (Continued from page 1)

provide the funds for its share of the cost of the undertaking. The portion of the capital cost of the storage as well as of the maintenance and operating charges, contributed by the Dominion, will be ultimately repaid to the Dominion Government by power interests developing the power in Manitoba in accordance with the terms and conditions already agreed upon.

The securing of storage in lac Seul marks a further step in the conservation program of the Department of the Interior in respect to the Winnipeg River powers, the first step of which has al-

## FEDERAL OFFICER REACHES POST BY AIR

New Gold Commissioner Makes Fast Trip to Dawson, Yukon Territory

That the progress of time is bringing about surprising improvements in transportation facilities to even the most remote corners of the Dominion—improvements which serve to greatly minimize the drawbacks of distance and bind Canada's broad spaces relatively closer one to another—is indicated by a recent message received by the Director of the North West Territories and Yukon Branch of the Department of the Interior.

The communication states that Mr. George I. MacLean, who was appointed Gold Commissioner of the Yukon April 1, and who left Ottawa on April 2, arrived at his destination, Dawson, on the eighteenth, or nine days after leaving Vancouver. This represents a normal saving of time of at least nine days, which was made possible by the circumstance that after making the trip up the coast by steamer and on by rail to Whitehorse, Mr. MacLean completed the journey from Whitehorse to Dawson by aeroplane in only six hours. Usually at this time of year this 450-mile leg of the journey takes ten days to negotiate by stage.

Mr. MacLean, the new Gold Commissioner, has had twenty-nine years of continuous service in the Department of the Interior (fourteen years in the Commissioner's office at Dawson and fifteen years in organization and accounting work in Ottawa). Since 1918 he has been Assistant Financial Controller of the Department.

### Proper Inflation of Tires for Parks' Highways

Motorists, who may visit any of Canada's national parks this summer, are reminded that they will drive with much more safety and comfort over the mountain highways if they will keep the tires of their cars inflated at the proper pressures. With the low pressure of balloon tires, under-inflation of a few pounds results in steering difficulties and also gives the car a tendency to roll on sharp curves.

Apart from the advantages of proper tire inflation to the motorist, there is less damage done to gravelled highways by properly inflated tires than by tires that are under-inflated. The latter exercise considerable suction on the road surface, resulting in the loss of the finer binding material, and the consequent "ravelling" of the road. All concerned are consequently benefited by proper tire inflation.

ready been realized in the storage which has been arranged for in the lake of the Woods by treaty with the United States and through the co-operation of Ontario. With the Lac Seul and Lake of the Woods storage in operation the Department estimates that the dependable flow on the Winnipeg river will be increased from 11,000 to 20,000 cubic feet per second and the dependable power increased from 400,000 to 750,000 commercial horse-power.



# NATURAL RESOURCES CANADA

PUBLISHED BY  
THE DEPARTMENT OF THE  
INTERIOR

HON. CHARLES STEWART,  
Minister

W. W. CORY, C.M.G.,  
Deputy Minister

*Natural Resources, Canada*, is published monthly for the purpose of promoting interest and supplying information respecting Canada's natural resources and their development. Inquiries respecting any matter or document dealt with should be addressed to

The Secretary,  
Department of the Interior,  
Ottawa.

This bulletin is also issued in French.  
Articles can be reproduced with or without credit.

OTTAWA, MAY, 1928

## The Late J. W. Greenway

By the death, at midnight on April 24, of Mr. John Wesley Greenway, Commissioner of Dominion Lands, the Department of the Interior lost a most capable and devoted officer and Canada a citizen of rare qualities of mind and heart. Mr. Greenway entered the Service in 1898 and for nearly a quarter of a century was Commissioner of Dominion Lands.

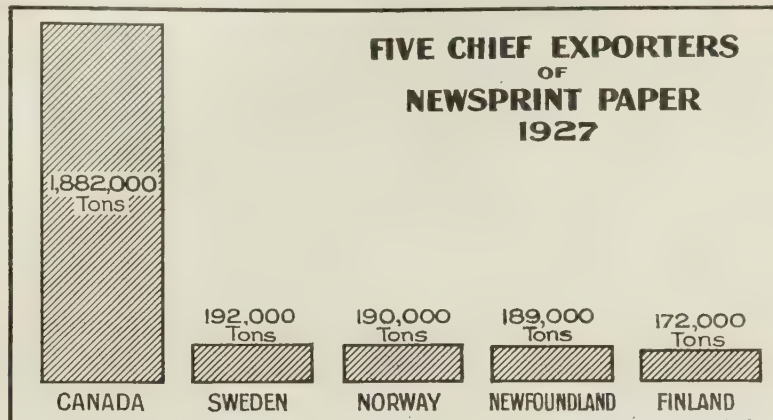


The Late J. W. Greenway

Mr. Greenway was born at Bervie, Bruce county, Ontario, on August 27, 1861, the eldest son of Mr. Thomas Greenway, afterwards Prime Minister of Manitoba. The family moved to Manitoba in 1878 when Mr. Greenway was seventeen. In the absence of railways through Canada the route taken was via St. Paul, Minnesota, to the end of steel at Pembina, Dakota, near the International Boundary, whence the travellers drove in prairie schooners to the site of their new home, at Crystal City, one hundred miles distant. Here, since Mr. Thomas Greenway was much away from home on legislative duties, a great deal of the management of the large farm, known as "Prairie Home," fell upon the eldest son. About 1895 Mr. J. W. Greenway entered mercantile life and in 1898 was appointed inspector of school lands with headquarters first at Crystal City and later at Winnipeg. In 1904 Mr. J. G. Turriff (now Hon.

## WORLD TRADE IN NEWSPRINT PAPER

Canada's Exports Exceed Those of All Other Countries Combined



According to the best data available the total export of newsprint paper from the different producing countries in 1927 was slightly more than 3,000,000 tons. Canada's export shipments accounted for over 60 per cent of this total and the balance was contributed by some fifteen countries. Sweden, Norway, Newfoundland and Finland, each exporting less than 200,000 tons, were fairly closely grouped, while Germany and Great Britain had the major shares of the re-

maining trade. The diagram is based on figures published recently by the Newsprint Service Bureau.

The Dominion's commanding position in this field of international commerce is, for the time being, beyond dispute, but it should also be a constant and effective reminder that the Canadian people have a greater business stake in forest protection and conservation than any other people in the world.

Senator Turriff) relinquished the post of Commissioner of Dominion Lands in order to return to Western Canada. Mr. Greenway was called from Winnipeg to undertake the work and from that time until his death continued to faithfully discharge the onerous duties of the position. He was a most conscientious officer who kept ever before him the public good. His term of office coincided with a period of great expansion in Western Canada and between 1904 and 1928 more public lands were disposed of for settlement than in all the preceding years since the West was thrown open. The figures in round numbers for homestead entries, pre-emptions, etc., are: disposed of up to 1904, 34,000,000 acres; 1904 to 1928, 39,000,000 acres. In his work Mr. Greenway's own experiences as a homesteader far from a railway line were of great benefit and enabled him to put himself in the place of the man in the field and to make allowance for the difficulties of the settler.

In private life Mr. Greenway ever showed an attractive personality. He was generous, considerate, a lover of music, art and literature and so modest and retiring that although possessed of an unusual literary gift, especially for poetic composition it was revealed only to the inner circle of his friends. Mr. Greenway's family life was ideal and the death of his wife (formerly Miss Elizabeth Jane Daly) on March 4 last, in his then delicate state of health undoubtedly hastened his own end.

## PROGRAM OF AIR OPERATIONS FOR COMING SEASON

(Continued from page 1)

**National Parks of Canada.**—Oblique aerial photography of the Snake Indian, Snaring, and Rocky River valleys; pictorial views of sites of historic interest when other operations permit.

**Dominion Water Power and Reclamation Service.**—Vertical and oblique photography in connection with power projects in New Brunswick, Ontario, Quebec, Manitoba, and British Columbia; vertical photography of the whole course of the Nelson river from lake Winnipeg to Hudson bay.

## OTHER DEPARTMENTS

**Department of Indian Affairs.**—Transportation of Treaty paying parties in northern Manitoba.

**Department of National Revenue.**—Transportation of officers of the Preventive Service as necessary.

**Department of Marine and Fisheries.**—Aerial patrol of Hudson straits to determine ice conditions in connection with the navigation of Hudson bay. Contracts have been let for air services in connection with fishery protection work on the Pacific coast.

**Department of Agriculture.**—Experimental dusting for the prevention of wheat rust in the Prairie Provinces, and for the control of the spruce bud worm in the Muskoka district in Ontario.

**Department of National Defence (Geographical Section).**—Vertical aerial photography for mapping in the Eastern Townships in Quebec, and in central Ontario.

**Department of Mines (In co-operation with the Topographical Survey Department of the Interior).**—Vertical aerial photography of mineralized areas in Quebec, Ontario, and Manitoba.

**Department of Public Works.**—Vertical and oblique photography of harbours and harbour works.

**Department of Railways and Canals.**—Transportation service and photography in connection with the Hudson Bay railway, and Fort Churchill terminal and harbour construction.

## PROVINCIAL AIR WORK

In addition to the work of the Royal Canadian Air Force, extensive programs are being carried out by provincial governments and private interests. The province of Ontario operates its own flying service and during the period of fire hazard, fire detection and suppression patrols are carried out throughout northern Ontario. Forest type mapping is also carried out on a large scale, as well as exploration in the district of Patricia, and the transportation of survey parties and government officials.

In Quebec and British Columbia the work is undertaken by commercial companies, under contract, for the respective

## PLACE-NAMES COMMEMORATE SIR WILFRID LAURIER

According to the records of the Geographic Board of Canada, Sir Wilfrid Laurier is commemorated in Canada by some seventeen place-names. On the Nova Scotia coast is Laurier rock. In Quebec are the villages of Laurier, Laurierville, and Mont-Laurier as well as Laurier township. Ontario also has a Laurier township and has too, a Laurier lake. Manitoba has a Laurier village. Saskatchewan has a Laurier municipality, while in Alberta are Laurier municipality and Laurier lake. In Mackenzie district, Northwest Territories, is Laurier river, and in British Columbia are Laurier pass, Laurier peak, Laurier cove, and mount Sir Wilfrid. British Columbia also has a Lady Laurier mountain and there is a mount Laurier in Yukon.

provincial governments. Extensive programs of vertical photography for forest mapping are being undertaken in the Lake St. John and Gaspé districts and much transportation for survey parties on the north shore of the gulf of St. Lawrence is done by aircraft. Air patrols for forest fire protection will be continued in British Columbia.

## COMMERCIAL SERVICES

The year 1927 saw a great advance in the establishment of regular air services in the remoter parts of Canada and in 1928 a further great advance is anticipated. It is now possible to travel by air to the principal mining fields in northern Saskatchewan, Manitoba, Ontario, and Quebec, with ease, comfort and safety.

In addition to these services, a large number of aircraft will be employed on transportation for mining exploration, prospecting, forest inventory, and other similar work in the remoter parts of Canada. Regular winter air mail services have been contracted for by the Post Office Department to the Red Lake area from Hudson, Ontario; to Anticosti and Seven Islands from Murray Bay, Quebec; to Charlottetown, and Magdalen islands from Moncton, New Brunswick; and from Leamington, Ontario, to Pelee island in lake Erie, the most southerly point in Canada.

Contracts are now being arranged for the hastening of incoming and outgoing trans-Atlantic mails during the summer season of navigation, to and from Rimouski to Montreal, Ottawa, and Toronto, and consideration is being given to the further extension of such services. Surveys are being undertaken to ascertain the best possible routes of travel by air.

Experimental work by the British Government in long distance travel by airship is proceeding and the airship mooring tower at St. Hubert Aerodrome, near Montreal, will be completed during the coming summer. If the trials of the airship now being carried out are satisfactory, it is possible that experimental trans-Atlantic flights may be undertaken this fall.

Interest in air transportation is growing rapidly and to encourage the knowledge and use of aviation the Department of National Defence is assisting in the establishment of light aeroplane clubs in the principal cities of the Dominion.

Canada offers a magnificent field for the development of air navigation on useful lines which are of benefit to the general public and there is no doubt that the next few years will see great strides made in the adoption of aerial transportation between the various parts of the Dominion.



## BOUNDARY TABLETS ON INTERNATIONAL BRIDGES

**Bronze Markers are Placed on Peace Bridge Spanning Niagara River**

The importance of having the exact position of the boundary permanently and plainly marked on international bridges between Canada and the United States has long been realized and has been emphasized within the last few years by a number of specific requests for information in this regard. Accordingly after a treaty had been signed in Washington in 1925, entrusting to the International Boundary Commission the task of maintaining the entire boundary between Canada and the United States in a state of effective demarcation, the Commissioners decided to mark the boundary on all international bridges, as well as to keep open vistas in wooded areas along the boundary, to repair existing boundary monuments, and to erect new ones where required.

The first bridge on which a boundary marker was placed was the new Peace Bridge which spans the Niagara river between Fort Erie and Buffalo. After determining the position of the boundary on the bridge with great accuracy, specially designed bronze tablets, 12 by 18 inches in size and bearing in low relief the coats of arms of the two countries and in addition appropriate inscriptions, were securely fastened to the concrete balustrade on each side of the bridge.

## CANADIAN GAME ANIMALS SHIPPED TO NEW ZEALAND

**Beaver and Rocky Mountain Sheep Donated to City of Auckland Zoological Gardens**

One of the happy results of the wild life conservation policy carried out in our national parks by the Department of the Interior is that Canada is now in a position to assist conservationists of other lands. At various times in recent years donations of wild animals have been shipped to points in the United States and other countries.

Recently one pair of beaver and one pair of Rocky Mountain sheep were shipped from Vancouver to the city of Auckland, New Zealand. The beaver were taken in Jasper national park, while the sheep are from the rapidly increasing wild herd in Rocky Mountains national park.

Every precaution was taken to see that the animals reached their destination in good condition, and on arrival at Auckland they were placed in the Zoological Gardens of that city.

### Fort Lennox, Ile-aux-Noix

Among the historic memorials of Canada that have been from time to time placed under the care of the National Parks Branch of the Department of the Interior there is none richer in historic interest or more charmingly situated than the massive old fortress, Fort Lennox, that stands in quiet dignity on the southern end of Ile-aux-Noix in the Richelieu river, in the province of Quebec. This fortress was erected by the British military authorities in the early part of the nineteenth century and since its abandonment as a military post in 1869 has been visited by increasing numbers of tourists each year.

## FOREST PRODUCTS RESEARCH

**Three Laboratories Under Department of the Interior, Canada, Assist Wood-using Industries**

The permanence and prosperity of the forest industries in Canada—second only to agricultural industries in importance—are dependent on the successful handling of two problems of outstanding importance: Firstly, it is vital that a crop of trees be maintained in a healthy growing condition on lands which are of value primarily for such a purpose; secondly, it is equally important that

The work of the Forest Products Laboratories was, for the first five years, concentrated in one organization in the city of Montreal. In 1918, on account of the demand for data on the suitability of British Columbia timber for aeroplane construction, a branch laboratory was started at Vancouver in association with the University of British Columbia. In 1925, the British Colum-



Forest Products Research in Canada—View of the building at Ottawa now occupied by the Forest Products Laboratories of the Department of the Interior. Inserts (Right) The branch laboratory at Vancouver, British Columbia; (Left) The new building in which the Pulp and Paper Division of the Laboratories will be accommodated at Montreal, Quebec.

the forest crop after cutting be utilized in the most complete and economical manner in wood-using industries. Problems relating to the growing forest are dealt with by the Forest Research Division and those respecting all phases of wood utilization by the Forest Products Laboratories; both are branches of the Forest Service, Department of the Interior.

The people of Canada are learning to appreciate keenly the importance and significance of the first problem. The second problem has not received so much public recognition; its importance is not so apparent to the uninitiated, but to those familiar with the industrial uses of wood it represents a major problem of immediate concern.

Based on the total amount of wood in the stand in the forest, it has been estimated that 25 per cent is wasted in the shape of small trees, tops, and breakage in felling when logging; 40 per cent is wasted at the mill in saw kerf, edgings, bark, and slabs; 5 per cent is lost in seasoning through checking and cupping; leaving only 30 per cent of the original forest stand to reach the channels of commerce as seasoned, unplanned lumber. Actual figures of course vary widely for different districts and different species of wood, but these are reasonably representative of average conditions; also, in the manufacture of chemical pulp under existing conditions fifty per cent of the dry weight of the wood is lost in the effluent or waste sulphite liquor. Twenty-five per cent of the lumber used each year is required to replace timber in buildings and other structures which has been destroyed by decay, a good deal of which loss might be prevented by the use of recognized wood preservatives. These represent only a few of the reasons underlying the organization of forest products research in Canada about fifteen years ago.

bia Government, through the University, provided new buildings, on the University grounds, designed and constructed to meet the requirements of the Vancouver laboratory. The Forest Service, Department of the Interior, supplied the equipment, maintains the staff, and has entire control of the laboratory operations.

Requests for assistance in the solution of scientific and technical problems by wood-using industries became so numerous that the Montreal laboratory soon outgrew its accommodation. The situation finally became so acute that it was deemed advisable in 1927 to move the central laboratory to more adequate quarters in Ottawa. However, the Pulp and Paper Division of the Laboratories was left in Montreal where through the interest of the Pulp and Paper Association of Canada it is being given excellent accommodation in a splendid new building erected by the Association on the site of the old laboratory. The Association also makes a substantial financial contribution to the program of research.

With the central laboratory in Ottawa, the Vancouver laboratory established in new buildings in Vancouver, and the Pulp and Paper Division now being installed in an excellent building in Montreal, the Laboratories will soon be in a position to assist to a greater extent than has heretofore been possible, the wood-using industries of Canada in the solution of those scientific problems relating to wood utilization.

The work of the Laboratories embraces investigation and solution of such problems as the determination of suitability of different woods for the manufacture of pulp and paper; the utilization of waste liquor from pulp mills; the manufacture of chemicals from wood by distillation or other processes; the study of the structure of different woods, and

## OIL PRODUCTION IN ALBERTA

**Figures for February, 1928, Show Increase Over Corresponding Month Last Year**

The production of petroleum in Alberta for the month of February, 1928, and the figures for the corresponding period in 1927, compiled from the statements submitted by the various oil producing companies to the officers of the Department of the Interior, are shown below. There is a substantial increase in all grades.

### Oil Production Statement for Alberta

	Crude Naphtha Barrels	Light Crude Barrels	Heavy Crude Barrels
February, 1928. . .	26,101	5,352	611
February, 1927. . .	22,810	2,256	420

### JASPER PARK'S APPEAL

(Continued from page 1)

how easily these trips can be taken even by a novice, they are eager to extend their experiences. With competent guides and well trained mountain ponies there is, in fact, nothing to prevent anyone of reasonable health and vigour from undertaking these trips. Among the riders last season was a gentleman who had considerably passed the age of three score years and ten, and a child who had not quite completed his first decade. A few seasons ago a lady who desired to accompany her husband to one of the outlying regions successfully made the trip over one of the most difficult passes with her two children, both under six years of age.

To care for this class of travel additional provision will be made this season at several of the outlying points along the trails. This will include additional accommodation at the Maligne Lake camp, and new permanent buildings at the Medicine Lake and Shovel Pass camps on the Jasper-Maligne Lake circuit. A base camp will also be provided on the Mount Robson-Berg Lake trail which will be reached either from the Mount Robson station on the Vancouver line or Emperor station on the Prince Rupert line. A permanent camp is also being established on the shores of beautiful Kinney lake, half way to Berg lake, so that parties journeying in from the railway to Berg lake may break their journey there if they so desire. These overnight camps are provided with comfortable beds and at most of them a resident cook and small staff are found. This enables expeditions to be made without the cumbersome pack train formerly necessary, a convenience which not only gives them a wider appeal but which allows people to linger if they desire at any point which specially attracts them. The very simplicity of this form of accommodation is a delight to many lovers of the wilds and there is no doubt that it will increase for many the opportunities of enjoyment open in Jasper national park.

the relations of such structural characteristics to physical, chemical, and mechanical properties; the testing of woods for use as large structural timbers, and also for aeroplane construction, containers, wooden equipment, etc.; the chemical and mechanical problems in the design and operation of wood preservation plants; the regulation of circulation temperature and relative humidity in the operation of lumber dry kilns; the study of the fungi which affect different timbers; and the carrying out of industrial investigations having in view improvements in commercial practices and the curtailment of waste.



# NATURAL RESOURCES CANADA

Published by DEPARTMENT OF THE INTERIOR, Ottawa

VOL. 7

JUNE 1928

No. 6

## GREAT ACTIVITY IN CANADIAN FAR NORTH THIS YEAR

ANNUAL PATROL SAILS  
ON JULY 18

Explorers from Department of the Interior  
Carry on Important Investigations—  
Police Work

The 1928 summer season will be one of great activity in the Northwest Territories of Canada. In the vast regions "north of Sixty" administered by the Department of the Interior exploratory and investigatory surveys will be carried on by officials of the North West Territories and Yukon Branch, and the annual patrol will be made by the ss. *Beothic*. The members of the Royal Canadian Mounted Police stationed in the North will carry on overland patrols in their work of maintaining law and order.

Preparations are now under way in the North West Territories and Yukon Branch for the annual trip of the ss. *Beothic* to the police posts in the Arctic archipelago. The ship will sail from North Sydney, Nova Scotia, on July 18. It is expected that the ports of call during the northward trip will be Godhavn, Greenland; Pond Inlet, Baffin island; Dundas Harbour, Devon island; and Craig Harbour and Bache Peninsula, Ellesmere island. The return trip from Bache Peninsula, the farthest north post, will begin sometime during the first week in August. The ship will again touch at Craig Harbour, Dundas Harbour, and Pond Inlet, and then move on to Pangnirtung and Lake Harbour, Baffin island. Circumstances will determine whether or not the expedition will sail to points in Hudson strait farther west than Lake Harbour.

Mr. George P. Mackenzie will again be the officer in charge and the chief navigating officer will be Captain E. Falk. Captain Morin will be ice pilot. Dr. Livingstone will go north this year to Pangnirtung where he will remain for a year carrying out medical patrols among the natives on Baffin island. Inspector A. H. Joy and a number of members of the Royal Canadian Mounted Police will also accompany the expedition.

In the Districts of Mackenzie and Keewatin many important investigations will be conducted. Major L. T. Burwash, exploratory engineer of the North West Territories and Yukon Branch, leaves Ottawa early in June for Edmonton en route to Aklavik in the mouth of the Mackenzie river. From the latter point he will begin his patrol eastward along the Arctic coast. The

(Continued on page 8)

## CANADA'S HOLIDAY ATTRACTIONS

Our Great Unspoiled Wilderness Areas an Irresistible Lure  
to Sportsmen and Vacationists

Everywhere to-day it is recognized that recreation is a necessity, not a luxury, and added to this fact is the growing realization that Canada is the ideal land in which to spend a truly up-building holiday. Eminent authorities on physical and mental health agree that the quality of a holiday is more important than the quantity, and that

And the bar of sun-warmed shingle  
Where a man may bask and dream  
To the click of shod canoe-poles round the bend?

It is there that we are going  
With our rods and reels and traces,  
To a silent, smoky, Indian that we know—  
To a couch of new-pulled hemlock  
With the starlight on our faces,  
For the Red Gods call us out  
And we must go."



Canada's Holiday Attractions—This expanse of placid water in Eastern Canada is the home of thousands of fighting, finny beauties which soon shatter this mirror-like surface when they are hooked.

impaired powers of mind and body are restored most rapidly where there is a complete change of scene and of currents of thought. Of the practical aspects of this subject—that is the strenuous character of modern life and the varied advantages of the different playgrounds of the world—few have written with so much knowledge and power as Rudyard Kipling, and it is a significant fact that in his famous poem, "The Feet of the Young Men," though he has the whole world before him and though he mentions the peculiar attractions of the Himalayas, the Baltic and the tropics, this author nevertheless devotes half the poem to describing the joys of holidaying amid the conditions which Canada provides. Reams might be written about the beauties and benefits of outdoor life in Canada without giving as much information as Kipling has compressed into the following swing lines:

"Do you know that racing stream  
With the raw, right-angled log-jam at the end;

This passage of course, sings the praises of the canoe (the motor car had not then come upon the scene) but the advent of the automobile has not decreased but increased the possibilities of enjoying that life. Canada has so much unspoiled wilderness behind her great agricultural and industrial areas, and the various provinces have so pushed motor roads into the hinterland, that the tourist can now motor to a thousand points where he can camp beside some placid lake or racing stream and enjoy unsullied nature to his heart's content. Or he can rent or buy a canoe and equipment and travel fascinating waterways for as short or as long a distance as he chooses. No one will ever be able to calculate the number of possible canoe trips in Canada. The Department of the Interior has scores of routes listed for which maps are available, but these are not one hundredth part of the number awaiting lovers of the wild. And for those who want larger adventures there

(Continued on page 8)

## CANADIAN TREE SEEDS FOR MANY PARTS OF EMPIRE

THOUSANDS OF POUNDS  
SHIPPED ANNUALLY

One of the Largest Plants on Continent  
Operated by the Department of the Interior

One of the largest tree seed extraction plants on the continent is maintained at New Westminster, British Columbia, by the Forest Service of the Department of the Interior. Here in good seed years, thousands of sacks of cones of Sitka spruce, western yellow pine, Douglas fir, western red cedar, western hemlock and other trees, are brought in by steamer, rail, motor truck and waggon. Here the cones are dried and the seed threshed out, cleaned, bagged and boxed or sealed in tin containers for shipment to various parts of the British Empire.

The motive prompting the establishment of this plant in 1921 was the desire of the Canadian Government to assist the Imperial Forestry Commission to reforest certain areas in the British Isles denuded during the war years. Experience has shown that many Canadian trees, particularly the Douglas fir and Sitka spruce of the British Columbia coast, do well in Great Britain.

The work of seed collecting from a small beginning in 1917, has grown to large proportions and to-day is assisting in building up forests in many parts of the British Empire. New Zealand, in particular, is supplied each year with large quantities of Canadian tree seed and smaller quantities are shipped to various parts of Australia and elsewhere.

The crop of tree seed varies greatly for each species from year to year. During the past season, taking all species as a whole, the crop was only medium. Of the three species most in demand—Sitka spruce, Douglas fir, and western yellow pine—only the Sitka spruce produced a satisfactory supply. The coast variety of the Douglas fir, which for several years has not borne abundantly, during the past season produced practically no crop. Following a bumper crop in 1926, the western yellow pine also yielded but little seed. From the 1926 crop, however, over 5,800 pounds of this seed was supplied to New Zealand alone.

The New Westminster plant during the season just past, was in operation from the middle of November to early in February, during which time 3,700 bushels of cones and unthreshed seed were handled, and 3,000 pounds of seed extracted. Approximately 1,550 pounds of this was seed of the Sitka spruce, and

(Continued on page 2)



## EFFECT OF SUN SPOTS ON LIVING CONDITIONS

**Dominion Observatory Investigating Scientific Aspects of Possible Relationships—Cycles Indicated**

The Sun is usually looked upon as a permanent body radiating steadily a life-giving stream of energy. True, he comes and goes with day and night, and rises and declines in the heavens with the changing seasons, but these apparent defections are ascribable to the vagaries of the Earth. However, on many occasions during the past twenty centuries, keen eyes have detected and recorded the presence of dark spots on the Sun, at times when he was sufficiently dimmed by smoke or haze to be closely observed. These spots march across the surface of the Sun indicating a period of rotation of about twenty-six days. They wax and wane in size and numbers in an irregular period with an average length of about eleven and a half years. The telescope and spectroscope reveal the fact that the dark spots are accompanied by brilliant clouds especially rich in the light of glowing hydrogen and of calcium, the ultra-violet light of the latter constituting a relatively large proportion of all the ultra-violet light of the Sun.

Ultra-violet light has the power of disrupting gases at low pressure and liberating electrons. Hence it is not surprising that the northern lights and magnetic effects on the Earth have been found to pulsate with the spottedness of the Sun.

It has been observed also that the polar caps of the planet Mars melt more rapidly when spots are plentiful on the Sun than when they are few in number; and that Encke's comet in its return every three and a half years is brighter at or near the times of sun-spot maximum than at minimum; and also that certain errors in the predicted positions of the Moon and planets coincide with a longer period in solar spottedness of sixty or seventy years. Consequently, it has not been without reason that a great number of investigations have been made in the search for a relationship between the variations in the Sun and in the weather and in living things. This is one of the objects of research at the Dominion Observatory, Department of the Interior, Ottawa.

In such a search effort has naturally been mainly confined to those records, unfortunately too few in number, which cover long periods of time. Scanty as they are they have revealed an eleven-and-a-half-year period existing in various terrestrial phenomena, and in a few cases where records of both living things and the weather were kept, the relationship to sun-spottedness is still more convincing.

In the case of the auroral and electromagnetic effects, as mentioned above, the relationship is at once apparent; in that of rainfall in some localities the pulsation of eleven and a half years (in the mean), shows a decided correspondence to the solar variations; temperature, barometric pressure, and numbers of storms have likewise shown the same periodic pulsations. A similar rhythm has been noted in dates of migration-arrivals of birds in France (Chandon records, Montdidier); numbers of rabbits in Canada (records of Hudson's Bay Company); marriages, births, and deaths in Russia (for the longer period of seventy years); influenza; growth rates of cotton and of corn in some localities in the United States. But per-



Canadian Tree Seeds for Many Parts of Empire—The extraction plant at New Westminster, British Columbia, of the Dominion Forest Service, Department of the Interior. In the foreground is a shipment of 2,100 pounds of Douglas fir seed ready for shipment to the British Forestry Commission.

haps the most valuable of all records are those obtained from the varying thickness of the annual rings in the giant redwoods of California during their three thousand years of growth. The measurements of these rings correspond so conclusively with the European records of sun-spots of the last three hundred years, that they may be regarded as yielding information concerning the solar variations during the centuries for which we have only the fragmentary Chinese records of sun-spots. The existence of the eleven-and-a-half-year sun-spot cycle and its reflection in terrestrial conditions, probably many thousand years ago, appears likely from the testimony of a Sitka spruce recently released by the recession of a glacier in northern British Columbia and measured at the Dominion Observatory.

We may confidently look forward to the time when accumulating knowledge of sun-spots and other solar effects will provide a basis for valuable predictions concerning the weather and living and economic conditions. At the present time, however, notwithstanding statements which have appeared in the press, our knowledge is too incomplete to make definite predictions. The realization of our dependence, and that of all the forms of life within our ken, upon the Sun is inducing astronomers, scientists, and statisticians, the world over, to bend their efforts to a clearer elucidation of the relationships of sun-spots and other solar phenomena to conditions on the Earth.

### CANADIAN TREE SEEDS FOR MANY PARTS OF EMPIRE (Continued from page 1)

600 pounds of lodgepole pine. The remainder was made up of western white pine, western red cedar, Douglas fir, western hemlock, western yellow pine, western larch, Engelmann spruce, broad-leaf and vine maple, and red alder.

The seed extracting activities of the Dominion Forest Service, however, are not entirely confined to British Columbia. Three smaller extracting plants are maintained in the Prairies Provinces at Rocky Mountain House, Alberta; Prince Albert, Saskatchewan; and at Indian Head, Saskatchewan. At these plants are extracted the seed required by the Forest Service for its nurseries, on the various national forests, and for its large nursery stations at Indian Head and Sutherland, Saskatchewan. During the past season these three plants produced 6,500 pounds of seed.

The number of seeds per pound of clean seed varies with the species and

runs from 500,000 in the case of western hemlock and 300,000 for Sitka spruce, to 3,000 in the case of ash. It is estimated that the total of over 9,500 pounds of seed collected by the Dominion Forest Service in 1927, contains approximately 6,390,000,000 seeds of all kinds. Allowing for poor germination and wastage in other forms, this represents potentially 4,260,000,000 trees, sufficient to set out 2,422,680 acres of new forests.

## GEODETIC SURVEYS AND FOREST PROTECTION

### Triangulation Stations in Gatineau District Selected as Sites For Fire Lookout Towers

While aerial patrols give indispensable aid in the detection of forest fires in undeveloped areas, lookout towers from which the country in all directions is visible are more frequently used for this purpose in organized districts. The proper location of these towers is a matter of great importance since the expenditure on towers, telephone lines, and trails, is large and, if the towers are not built on the most commanding elevations the best results will not be secured.

The usefulness of a triangulation system similar to those laid down by the

## OIL PRODUCTION IN ALBERTA INCREASED DURING MARCH

The production of petroleum in Alberta during the month of March was considerably greater than that during the corresponding period in 1927 according to figures compiled from statements submitted by the various operating companies to the Department of the Interior. The comparative figures for the different grades follow:—

March	Crude Naphtha (bbls.)	Light Crude (bbls.)	Heavy Crude (bbls.)	Total (bbls.)
1928..	32,455	5,413	942	38,810
1927..	24,296	2,169	225	26,690

Geodetic Survey, Department of the Interior, as an aid in the selection of sites for fire lookout towers was demonstrated in a most comprehensive and conclusive manner during 1927 in the Gatineau valley north of the city of Ottawa. Here a triangulation net was required as a basis for aerial mapping by the Topographical Survey, Department of the Interior, to aid in developing the forestry and water-power resources of the area. A large industrial company offered its co-operation in the work, because apart from the value of the triangulation as an accurate basis for mapping the district, a system of 80-foot steel fire-lookout towers was being planned by the company for the protection of its timber limits, and it was felt that the parties sent out by the Geodetic Survey would be able to indicate the best positions for these towers.

The reconnaissance for the selection of triangulation stations was begun in 1927 and the southerly 4,500 square miles of the area was adequately covered by a primary net along the Gatineau river with stations as required. Of the nineteen primary and secondary stations selected all but two will be immediately used as tower sites. Five of these sites had already been selected by the company as the locations for 80-foot steel towers when the work started, and they were incorporated with the triangulation scheme; the other twelve tower sites were accepted by the company.

The average distance between towers is about sixteen miles, as it is estimated that in hazy, dry weather, when fires are most likely to occur, it is impossible to discern smoke at a greater distance than ten miles, even though in clear weather the country can be viewed to much greater distances. At one station on the highest point of mount Diable east of Maniwaki, Quebec, elevation 2,600 feet, the country is visible for fifty miles in all directions in clear weather. Under these weather conditions several other lookout towers are visible from this station.

The above is but an example of how through close co-operation economy can be effected by the judicious choice of station sites so that the towers which the Geodetic Survey of Canada, Department of the Interior, build can be utilized to provide the basis of detailed topographic information, to promote the conservation of the resources of the country, and in addition to prove serviceable to industrial development.

### Total Stand of Timber

It is estimated that of the total stand of timber in Canada (242,127,000,000 cubic feet), the softwood, or coniferous species account for 418,034,000,000 feet board measure of saw material and 876,568,000 cords of pulpwood, fuelwood, etc. The deciduous, or hardwood species total 39,846,000,000 feet board measure and 412,502,000 cords, or 47,458,000,000 cubic feet.



Geodetic Surveys and Forest Protection—A steel forest fire lookout tower erected at a triangulation station.



# NATURAL RESOURCES CANADA

PUBLISHED BY  
THE DEPARTMENT OF THE  
INTERIOR

HON. CHARLES STEWART,  
Minister

W. W. CORY, C.M.G.,  
Deputy Minister

*Natural Resources, Canada*, is published monthly for the purpose of promoting interest and supplying information respecting Canada's natural resources and their development. Inquiries respecting any matter or document dealt with should be addressed to

The Secretary,  
Department of the Interior,  
Ottawa.

This bulletin is also issued in French.  
Articles may be reproduced with or without credit.

OTTAWA, JUNE, 1928

## DEVELOPMENT OF NEW VARIETIES OF WHEAT\*

### Forms Important Part of Work of Dominion Experimental Farms—Garnet Wheat

Canada holds a leading position among the wheat-producing countries of the world and because of the importance to the Dominion of its spring wheat this crop receives the greatest attention in the investigations of the Cereal Division of the Dominion Experimental Farms, Department of Agriculture. One of the present objectives of the Cereal Division is the development of a variety of wheat combining high yield and good baking qualities with a high degree of resistance to stem rust. Breeding for rust resistance is concentrated largely at present in the Rust Research Laboratory at Winnipeg. Attention is also being given to the selecting of varieties adapted to different sections of Western Canada.

Since the beginning of the investigations many notable advances have been made and Canada's present position as a wheat producer is due in a large degree to the development of superior varieties, of which Marquis is the most famous. In recent years Garnet wheat, a cross made in 1905 between Preston and Riga, has been developed and in 1926 several hundred bushels of this new variety was placed on the market for the first time. Its performance in the field was closely watched and repeated tests were made as to the baking qualities of the flour. The result was that this variety was classed as an early maturing, high yielding wheat of good weight per bushel, excellent colour of grain and fair strength of straw. It was considered a variety which could be recommended to agriculturists in districts to which Marquis was not well adapted, except in localities where stem rust was liable to occur.

In 1927 Garnet was subjected to still more comprehensive and exacting tests with the result that conclusions arrived at during the earlier tests were confirmed to a remarkable degree. As regards yield, Garnet undoubtedly is entitled to

\*Prepared at the direction of Dr. J. H. Grisdale, Deputy Minister of Agriculture, by Mr. L. H. Newman, Dominion Cerealists, Ottawa.

## AN OPPORTUNITY FOR EXPANSION OF CANADA'S FUR TRADE

The recent development of world trade presents few features more remarkable than the rise in the fur imports of the United States. In pre-war days the States annually imported rather less than \$15,000,000 worth of undressed furs. Last year the imports exceeded the huge sum of \$123,000,000. Just as India has for many years shown an insatiable appetite for silver, so the United States appears to have become the great magnet for the world's furs of all kinds.

There is no doubt that the United States to-day comprises a fur market which, in extent and buying power, far surpasses anything previously known. And while this enormous modern fur business is due largely to the growth in the use of the cheaper furs, it holds at the same time a special interest to the Dominion as one of the world's chief producers of high quality furs. With a next-door market which is importing furs at the rate of more than a hundred million dollars worth a year, Canada's resources for fur production

loom up as a more valuable economic asset than ever.

### GROWTH OF FUR IMPORTS INTO UNITED STATES

\$123,600,000



1927

\$14,700,000



Value of Imports

rank among the most productive of our common wheat varieties, especially in districts for which it is adapted. In Alberta and in parts of northern Saskatchewan particularly, some astonishing yields have been recorded, but in districts suffering from stem rust, results were less encouraging. The fact that Garnet matures from a week to ten days earlier than Marquis created a hope that the variety might be of value in rust areas, but while this variety may frequently escape rust by reason of its early maturity it is not sufficiently safe to grow in districts liable to rust epidemics.

In weight per measured bushel and in the percentage of flour extracted from a given quantity of wheat, Garnet has exceeded Marquis slightly, but not to a significant degree. As to hardness, Garnet is undoubtedly inclined to produce a harder or more vitreous kernel than Marquis and appears also to hold its colour better under adverse weather conditions.

Baking tests conducted by the Cereal Division at Ottawa and elsewhere during 1927 indicate that the chief point in which there appears to be any appreciable difference between Marquis and Garnet is in the colour of the flour and crumb. Garnet undoubtedly does not produce as white a flour as does Marquis. Overseas millers and bakers, however, do not seem to regard the creamy shade of Garnet flour as objectionable since Canadian wheats are always blended with other wheats and are valued primarily on account of the strength and stability of their gluten.

The precocity of Garnet coupled with its productivity bids fair to have an effect on the quality of Canadian wheat in a way not fully appreciated. Recent analyses of overseas shipments by the Cereal Division confirm previous observations to the effect that certain old varieties of poor or mediocre quality, which were introduced years ago chiefly on account of their relative earliness of maturity, still persist to a greater or lesser extent in many districts. The introduction of a variety such as Garnet which attracts immediate attention by reason of the remarkable degree in which it combines quick maturity with

high yield is destined to have the effect of purging great sections of the Dominion's finest wheat-growing lands of discredited varieties and mixtures, and to this extent should reduce the difficulties which at present confront the official graders of our commercial grain.

### GREAT ACTIVITY IN CANADIAN FAR NORTH THIS YEAR

(Continued from page 1)

principal investigations to be carried on by Major Burwash will be a further search in and around King William island for records and relics of Sir John Franklin's ill-fated expedition of 1845; a survey of navigating conditions in Franklin strait and Peel sound; an examination of a proposed tractor-train route from Wager bay on the west coast of Hudson bay to Cockburn bay south of King William island; and a visit to the magnetic pole on Boothia peninsula. It is expected that Major Burwash will complete his work in the autumn of 1929.

A patrol of the musk-ox sanctuary lying on the Hanbury and Thelon rivers east of Great Slave lake was undertaken early in the year and this work will be continued during the summer. Mr. W. H. B. Heare left Ottawa in January for Edmonton. From that city he travelled by train to the end of steel at Waterways, where he began an 800-mile journey by dog team to his base camp on the site of Fort Reliance, at the east end of Great Slave lake and about 35 miles southwest of the westernmost corner of the 15,000-square mile game sanctuary. He is accompanied by a warden from Fort Smith and his investigations will not be completed until the summer or fall of 1929.

Investigations to determine what areas in the Northwest Territories are most suited for grazing of herds of reindeer will be continued this summer in the area north of Great Bear lake. The Messrs. A. E. and R. T. Porsild, who have been engaged in this work since 1926, have reported on their biological investigations in the area lying east of the Mackenzie River delta and inland from the Arctic coast, and the results appear to be very satisfactory.

### CANADA'S HOLIDAY ATTRACTIONS

(Continued from page 1)

is nothing to prevent the traveller from stepping into his canoe on the bank of some quiet upland stream, and, after real adventures by flood and field, coming out on the bay of Fundy, the Atlantic or the Pacific, one of the Great Lakes, or even Hudson bay or the Arctic coast. Indeed some of these trips are being essayed every summer.

Whether the tourist travels by railway, steamship, motor boat, canoe, by the ubiquitous motor car or by any combination of these means of travel, he is sure of finding good scenery, untrodden ways, exhilarating days and cool nights, a rest from the heat and dust and glare of cities, and a chance to study wild life, such as can be had nowhere else. At the same time he can avail himself of just as much or as little of hotel facilities and other modern conveniences as he desires. The background is ever one of unspoiled beauty—a companionship with wild creatures, which is the warp of Kipling's poem, and which he brings out in the following stanzas:—

"Who hath seen the beaver busied?  
Who hath watched the black-tail mating?  
Who hath lain alone to hear the wild goose cry?  
Who hath worked the chosen water  
Where the ouananiche is waiting,  
Or the sea-trout's jumping-crazy for the fly?  
Who hath smelt wood-smoke at twilight?  
Who hath heard the birch-log burning?  
Who is quick to read the noises of the night?  
Let him follow with the others  
For the young men's feet are turning  
To the camps of proved desire and known delight."

The problem of securing for the native population of Canada's far northern regions a source of food and clothing to supplement that provided by the diminishing wild life is a pressing one and the introduction of reindeer herds is looked upon by the Government as a possible solution.

Patrol work forms an important part of the duties of the members of the Royal Canadian Mounted Police stationed along Canada's northern coast and on the islands of the Arctic archipelago. During the early spring and summer thousands of miles of territory are covered by the police and their dog teams. The police posts in the Eastern Arctic Sub-District are visited annually by the ss. *Beothic* with provisions and supplies. In the Western Arctic Sub-District, the completion of their new auxiliary schooner, the construction of which was begun last summer, will greatly lessen the difficulties under which the police work in this administrative area. In the past the commercial ocean-going vessels have been relied upon for relief of personnel and the transportation of supplies to the detachments along the Arctic coast. The fact that incoming vessels cannot safely round Point Barrow, Alaska, until relatively late in the season, and the necessity for an early start on the outward trip to avoid dangerous ice conditions, greatly shorten the time for visiting the posts. The result is that it often happens that the far eastern detachments do not receive their supplies until late in the year. This year the new schooner will operate from Herschel, the most westerly post of the Royal Canadian Mounted Police on the Arctic coast, and will visit at regular intervals the posts of Baillie Island, Bernard Harbour, and Cambridge Bay to the east. The boat has been specially strengthened and equipped so that her complement of thirteen officers and men may, when necessary, serve as a floating detachment at any place on her patrol.



## POSSIBILITIES OF OUR NORTHERN PLAINS

Recent Surveys Reveal Character and  
Resources of Country Misnamed  
"Barren Grounds"

As exploration and surveying reveal the character and resources of the great northern plains of Canada, former misconceptions of these great areas are disappearing. For many years, in fact for almost a century, nearly one-sixth of the area of the Dominion was branded "Barren Lands" and until recent years very little was done to reconsider the possibilities of these regions in the light of present-day conditions. However in addition to carrying on their regular work, surveyors and explorers of the Topographical Survey of the Department of the Interior, have been gradually penetrating into the Great Northern Plains. With the advantage of modern instruments and the benefit of scientific and technical training, these officers of the Department are enabled to make more accurate surveys of the country than was possible by early explorers.

How one of the first explorers of Canada's Middle West came to apply the name "Barren Grounds" to what has proved to be one of the most fertile areas in the world is given in the account of Henry Kelsey's explorations in the last quarter of the seventeenth century. One of Kelsey's longest expeditions was made between 1690 and 1692 when he travelled from Port Nelson, on Hudson bay, by way of the Hayes and Saskatchewan rivers. He journeyed in the company of a wandering band of Assiniboines, into the heart of the western prairies. His diary affords interesting reading to-day, particularly the entry for August 23, 1691, which reads as follows:

"This instant ye Indians going a hunting kill'd great store of Buffallo. Now ye manner of their hunting of these Beast on ye barren ground is when they see a great parcel of them together they surround them with men; wch done they gather themselves into a smaller Compass keeping ye Beast still in ye middle and so shooting ym till they break out at some place or other and so gett away from ym."

Of the country itself, Kelsey states: "This plain affords nothing but short round sticky grass and Buffallo and a great sort of Bear wch is bigger than any white Bear and is neither white nor black but silver haired like our English rabbit. Ye Buffallo likewise is not like those to ye Northward their horns growing like an English ox but black and short."

Kelsey's interest in the region was from the point of view of the fur trader and its possibilities from an agricultural standpoint apparently never occurred to him. The country where he hunted the buffalo and the grizzlies now contributes hundreds of millions of bushels of grain annually and the "short round sticky grass" supports great herds of cattle.

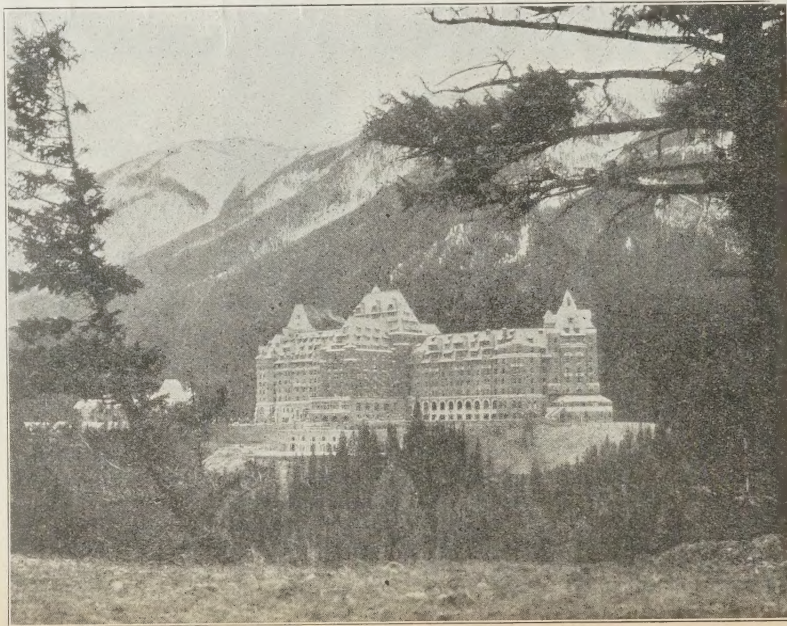
A thousand miles north of the territory traversed by Kelsey, beyond the forested lands of the Canadian West and extending to the Arctic ocean and Hudson bay, are the Great Northern Plains to which Kelsey's epithet has been mistakenly transferred. To-day's picture, given by recent explorers, is one of gently undulating country with lichens and mosses on the hills and shrubs,

## MOTORING IN CENTRAL ROCKIES

Rocky Mountains, Kootenay, and Yoho National Parks  
Prepared for Biggest Tourist Season

All indications point to a record season in tourist travel to Rocky Mountains national park. The number of inquiries and requests for reservations is unusually large and already the stream of travel is flowing. In fact motor travel began more than a month ago and every week-end during the month of May brought numbers of cars from

ated on the mountain slope overlooking the beautiful Bow valley and there are fine views of the surrounding peaks. The camp is one of the most thoroughly equipped and modern in the Canadian West. The site was laid out by a landscape architect and is equipped with water facilities, sewers, and electric light. Several shelter houses, com-



Motoring in the Central Rockies—A recent view of the palatial Banff Springs hotel, operated by the Canadian Pacific Railway at Banff in Rocky Mountains national park. This photograph shows the Bow River valley and in front of the hotel may be seen the open air swimming pools one of which is supplied with water from the sulphur springs on the side of Sulphur mountain in the background.

the Prairie Provinces. The building of motor highways in recent years has considerably extended the tourist season of this park which formerly began on June 1 with the opening of the large hotels. The month of May, however, is a delightful one in the mountains—the trees are in their first leaf, all the lower valleys are brilliant with spring flowers, and the sound of rushing waters from the melting snows is to be heard on every hand. The main park roads, except across the high passes, are in good condition for travel and the glorious spring sunshine makes motoring a delight. So each succeeding year brings larger numbers of motorists to the park in these early weeks of the season. Last year 1,937 cars were registered during the days May 22, 23, and 24, the largest number for any like period up to that time.

A number of improvements will add to the pleasure of visitors this year. One of the most important of these will be the new motor campsite on Tunnel mountain. The former campsite at the junction of the Bow and Spray rivers had to be relinquished on account of the extension and re-modelling of the Banff golf links, but the new campsite promises to be even more delightful. It is situ-

flowers and grasses flourishing in the valleys. It is true no trees grow north of the timber line and that there are certain areas lacking in vegetation but the greater part of the region is so far from being barren that it actually supports at the present time in addition to the fur-bearers and musk-oxen, hundreds of thousands of caribou.

munity kitchens, and baths add to the convenience of travellers, while the close proximity of the camp to Banff will make the procuring of supplies an easy matter. The privilege of camping may be enjoyed for a nominal charge; this year a special rate of two dollars permits the motorist to camp at any government campsite in the three adjoining parks—Rocky Mountains, Yoho and Kootenay—during a period of thirty days.

The building of the Kicking Horse Trail, which opened the gates of Yoho park, and of the Banff-Windermere highway which traverses the Rocky Mountains and Kootenay parks, have made these three reserves virtually one playground so far as the motorist is concerned. To-day nearly all visitors to Banff go on to Lake Louise which is only 37 miles away, and thence across the Kicking Horse Pass into Yoho park and on to Field, an additional distance of 16 miles. Last year hundreds of motorists also took the complete circle tour, proceeding westward from Field to Golden, thence south by the Columbia River road to Fairlands, British Columbia, and thence east again by the Banff-Windermere highway to Rocky Mountains park. A through motor-bus service will this year be provided so that even those visitors who do not bring their own cars may enjoy the delights of crossing the Central Rockies in this open-air and open-sky way. Travellers may now, if they desire, leave the train at Calgary, take the motor-bus there and go to Banff, stay as long there as they wish, then go on to Lake Louise, Wapta Lake, Field, Emerald Lake, Yoho

## OVER 1,000 BUFFALO FOR NORTHERN RESERVE

Further Movement from Wainwright,  
Alberta, to Wood Buffalo Park  
Early in June

A further movement of between 1,000 and 1,100 yearling and two-year-old buffalo will be made from the Buffalo national park at Wainwright, Alberta, to Wood Buffalo park near Fort Smith, Northwest Territories, beginning the first week in June. An officer of the North West Territories and Yukon Branch of the Department of the Interior is at present in the West completing arrangements for the first train load of the 1928 shipment. The animals, which were segregated in corrals during the winter, will be placed in specially equipped cars at the siding at Wainwright. They will be shipped by rail to Waterways and then loaded on scows for the water journey to a point 11 miles south of Fitzgerald, where they will be released into the park. Weekly shipments will be made until this year's quota has been transported which will be some time early in July.

This year's movement will bring the total shipped to Wood Buffalo park to over 6,600 and the number of buffalo in the park to an estimated grand total of over 9,000. Wardens report that the buffalo placed in the park since the first movement in 1925 are making satisfactory progress.

Valley, and Golden, where they may again re-enter the train. Arrangements to take the journey in this way from Banff to Golden may now be made when purchasing the railway ticket.

During the winter a fine addition to the Banff Springs hotel was completed in time for this season's travel. The new wing brings the accommodation of this hotel—now one of the most beautiful and luxurious on the continent—up to 600 rooms. There is also a splendid new ball-room, and a dining-room, as well as a large addition to the service quarters. The new wing is thoroughly modern, of fire-proof construction throughout, and built in the "chateau" style in keeping with the other portions of the hotel.

The golf course is also being entirely remade and when completed will rank with the best on the continent. Its unique situation, between the slopes of Mount Rundle and the Bow and Spray rivers affords not only magnificent views in all directions but provides exceptionally sporting play. The drive from the first tee will now be directly across the Bow river and a new bridge has been built near this point for the use of the players or other pedestrians. It is expected that nine holes of the new course will be ready in time for this season's play and work will be rushed on the completion of the remaining nine holes during the summer.

### BEAVERS FOR SCOTLAND

Canada has donated a pair of live beavers to the Zoological Society of Scotland. These little animals, captured and conditioned in Jasper national park, were transported to Montreal and placed aboard the ss. *Cairnisk* when she cleared on May 18. Their destination is the Zoological Gardens at Edinburgh.







١٠٠